NASA CR-139036

THE NIMBUS 5 DATA CATALOG

VOLUME 1

19 DECEMBER 1972 THROUGH 31 JANUARY 1973

DATA ORBITS 104–693

GODDARD SPACEFLIGHT CENTER

GREENBELT, MARYLAND

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THE NIMBUS 5 DATA CATALOG

Volume 1

19 December 1972 through 31 January 1973
Data Orbits 104 through 693

Prepared by

Allied Research Associates, Inc.
Baltimore, Maryland

For the

ERTS/Nimbus Project

May 1973

GODDARD SPACE FLIGHT CENTER
Greenbelt, Maryland

FOREWORD

This is the first volume of a series of catalogs published by the National Aeronautics and Space Administration to document data acquired from the Nimbus 5 Meteorological Satellite. This volume covers the period from 19 December 1972 through 31 January 1973 with subsequent catalogs to contain documentation for succeeding periods throughout the useful lifetime of Nimbus 5.

Background information concerning the Nimbus 5 Meteorological Satellite system and a description of the experiments and data formats have been published separately in The Nimbus 5 User's Guide, with post-launch User's Guide information changes and corrections included in the data catalogs. The Nimbus 5 catalogs present the type of data available, anomalies in the data, if any and geographic location and time of the data.

The assembly and editing of this catalog was accomplished by Allied Research Associates, Inc. (ARA), Baltimore, Maryland, under contract number NAS 5-21617 with the Goddard Space Flight Center, NASA, Greenbelt, Maryland

S. Weiland
Project Manager
ERTS/Nimbus Project
Goddard Space Flight Center

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SECTION 1

SUMMARY OF OPERATIONS

1.1 Introduction

Nimbus 5 was successfully launched from the Western Test Range at Vandenburg AFB, California, into a near circular orbit (1089 km x 1102 km) at 07 hr 56 min 00 sec GMT on 11 December 1972. All experiments and subsystems were successfully turned on. Satellite operations from launch (11 December) through orbit 103 (18 December) consisted of engineering evaluation of all spacecraft systems. As a result of that effort, data reception, accountability, and processing were intermittent during that period. Therefore, this catalog reflects documentation from orbit 104 (19 December 1972) through orbit 693 (31 January 1973).

The sensory data output and total operating time from launch through orbit 693 were as follows:

ESMR	1095 hours	
ITPR	1098 hours	
NEMS	1100 hours	
SCR	1098 hours	
THIR	1100 hours	
SCMR-Direct	2 hours	(No useable SCMR data was recorded after orbit 320. See Section 1.3)
Recorded	6 hours	

Deviations from nominal attitude occurred during this catalog period. Pitch was made to alternate between +2.9 degrees and +3.5 degrees according to Table 1-1. A suspected roll bias was investigated, with results described below confirming its existence. Yaw was held within nominal bounds.

A positive pitch angle of 2.9 degrees moves the principal point 55.6 km behind the sub-satellite point, while a positive pitch of 3.5 degrees moves the point 66.7 km. When the spacecraft undergoes pitch, a scanner type instrument no longer scans the earth along a great circle arc, but scans along the small circle formed by the intersection of the scan plane with the earth. Since the plane of the small circle is tilted with respect to the nominal scan plane, points on the arc are displaced farther from the great circle as the scan angle increases. As noted above, a pitch angle of 3.5 degrees causes a displacement of 66.7 km at the principal point, but when the scanner turns 45 degrees away from the principal point, the displacement grows to 74.1 km. Thus, although the instrument records in lines normal to the orbit plane (in the absence of yaw), the displacement is not uniform across the scan line.

Table 1-1

NIMBUS 5 PITCH BIAS HISTORY FROM ORBIT 104 (19 DECEMBER 1972) THROUGH ORBIT 693 (31 JANUARY 1973)

DATE \ Pitch Bias	+2.5°	+3.5°
12/19-12/21		104-134R
12/21-12/22	134R-151A	
12/22-12/28		151A-226R
12/28-12/29	226R-249A	
12/29-1/2		249A-302A
1/2-1/6	302A-347R	
1/6-1/9		347R-397A
1/9-1/13	397A-440W	
1/13-1/16		440W-488A
1/16-1/20	488A-539A	
1/20-1/23		539A-583A
1/23-1/31	583A-693A	

(R=Rosman, North Carolina; A=Fairbanks, Alaska; W=Winkfield, England)

As mentioned above, a suspected roll bias was investigated. The method consisted of measurement of lengths (on the paper Visicorder plots) of scan data from the Temperature Humidity Infrared Radiometer, the conversion of these lengths to equivalent scanner angles, and the comparison of these inferred (observed) angles with their theoretical values. Discrepancies can be interpreted as roll errors. Figure 1-1 shows the least squares curve of best fit to the observed roll bias values found by this method, for each of the two orbits analyzed. Table 1-2 is a summary of the results.

Table 1-2

AVERAGE NIMBUS 5 ROLL BIAS VALUES FOR ORBITS 336 AND 662

Date	Orbit	Average Roll Bias (deg.)	Max. Departure from Average Bias (deg.)
5 Jan. 73	336A	0.64	0.30
26 Jan. 73	622A	0.21	0.10

The January 26 orbit occurred shortly after the SCMR scanner motor was turned off. The results support the conjecture that the scanning mirror of the SCMR instrument introduced a torque which caused the major part of the earlier roll bias.

Subsections 1.2 through 1.7 of this catalog summarize the operational highlights of the individual experiments and call attention to known data anomalies. Section 2 lists the on-off times for each experiment. Sections 3 and 4 show ESMR and THIR imagery, while Section 5 presents corrections to The Nimbus 5 User's Guide.

The user is referred to The Nimbus 5 User's Guide for a complete description of each experiment and to Section 1.7 of that Guide for the requesting procedure and sources for all data. Sections 2, 3, and 4 of this Data Catalog should help the user to select data to meet his needs.

1.2 The Temperature Humidity Infrared Radiometer (THIR) Subsystem

The quality of the THIR data from both channels (11.5μm and 6.7μm) has been excellent. Figure 1-2 is an example of THIR pictorial data. Root mean square (rms) THIR temperature variations, due to flutter in the HDRSS tape recorders and to normal noise components, appear to less than 2°K.

All processed THIR film is archived and available through the National Space Science Data Center, as is all available THIR digital data. The THIR digital products are processed to final format only on request. Sections 1.7 and 2.4 of The Nimbus 5 User's Guide discuss the formats and procedure to order these products.

1.3 The Surface Composition Mapping Radiometer (SCMR) Experiment

The SCMR experiment collected and returned approximately 35 hours of instrument data during the first 320 orbits. Intermittent loss of a scan mirror synchronization pulse caused a loss of useful data output whenever this occurred. This synchronization problem progressed to the point where no useable data could be obtained after orbit 320 (4 January 1973).

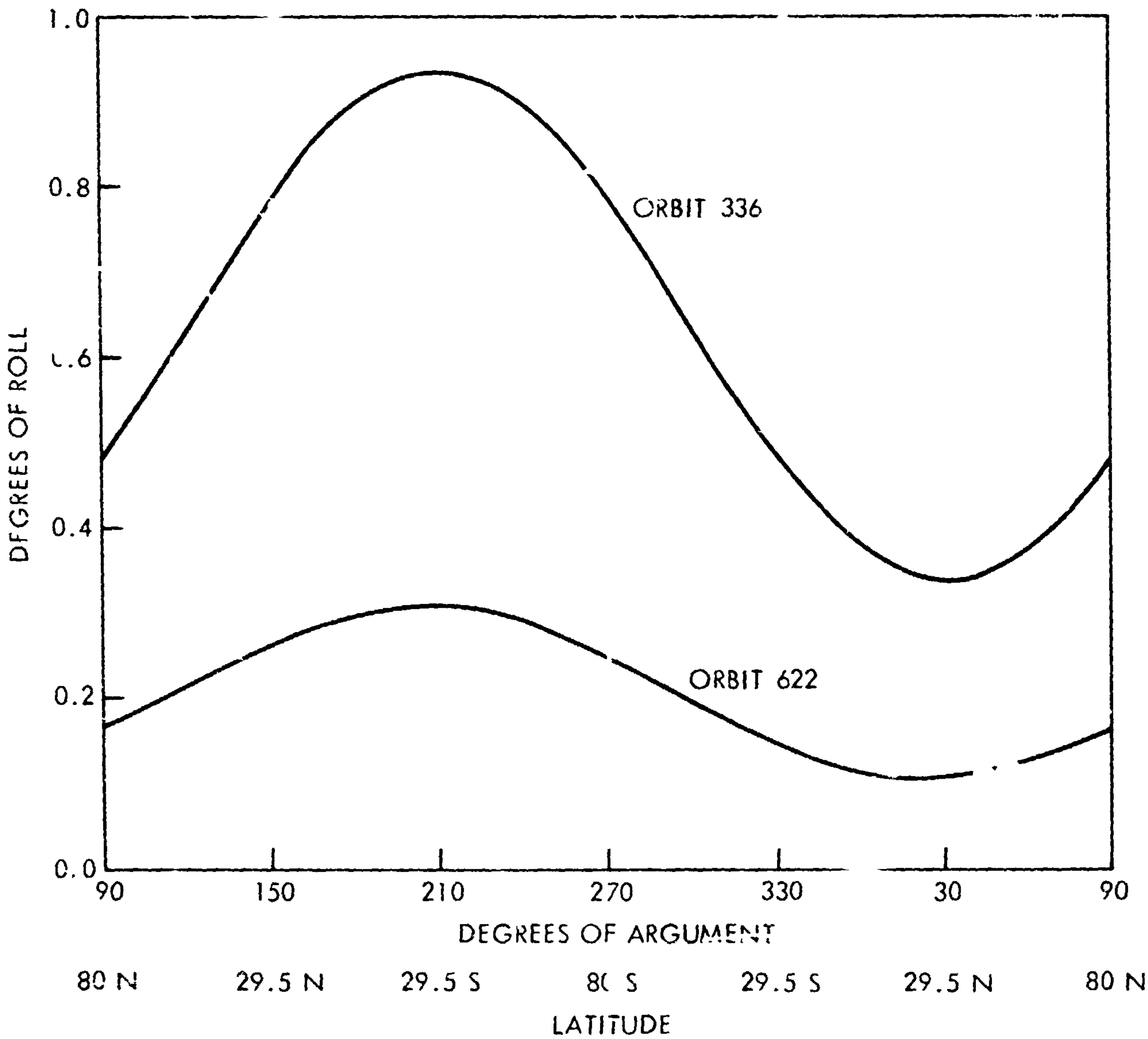
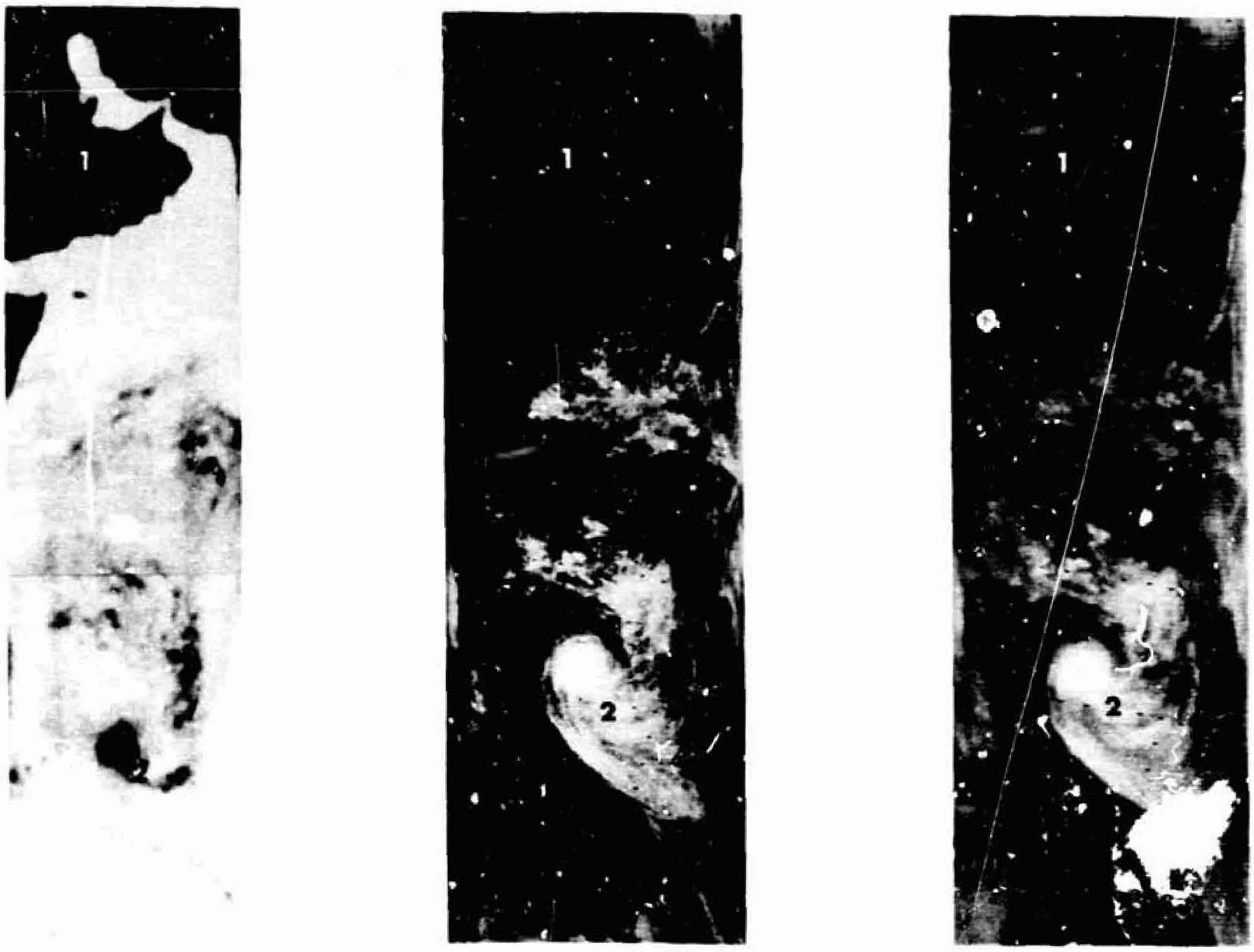


Figure I-1. Nimbus 5 Roll Bias Curves Derived from THIR Visicorder Data.



ESMR 1.55 cm
190°K to 259°K
Brightness Temp.
Display

THIR 11.5 μm

THIR 6.7 μm

20 DECEMBER 1972

The Nimbus 5 Electrically Scanning Microwave Radiometer (ESMR) and the Temperature Humidity Infrared Radiometer (THIR) can be used in parallel to observe and analyze atmospheric and terrestrial phenomena. The ESMR brightness temperature display indicates areas of rainfall occuring in a cyclone (2), 3900 kilometers south of Saudi Arabia (1), while the 11.5μm THIR data provides cloud top and surface temperatures and the 6.7μm THIR data provides the moisture content of the upper troposphere and stratosphere over the same area.

Figure 1-2. A Comparison of Nimbus 5 THIR and ESMR Pictorial Data.

Figure 1-3. Nimbus 5 SCMR Nighttime Infrared (10.7 μm Channel) Image Recorded over Florida and Cuba on 24 December 1972.

Figure 1-3 is an example of the 10.7μm data recorded over Florida and Cuba when the instrument was operating in a near-normal mode. Many fine-scale thermal features are evident. The principal investigator for this experiment, Dr. W. Hovis, is currently analyzing the available data.

Users who desire SCMR data or information should write to Dr. Warren G. Hovis, Code 652, Goddard Space Flight Center, Greenbelt, Maryland 20771.

1.4 The Electrically Scanning Microwave Radiometer (ESMR) Experiment

The ESMR instrument operated very well during its first two months in orbit. In the last 100 orbits of this reporting period there were several data dropouts for durations of 16 to 64 seconds. All systems returned to normal after each dropout. Figures 1-2 and 1-4 are examples of the ESMR photographic products

One pictorial display is generated from the output of each orbit (see Section 3). Digital Nimbus Meteorological Radiation ESMR tapes are being produced by the Laboratory for Meteorology and Earth Sciences for archiving at the NSSDC. User output formats for these tapes were published in The Nimbus 5 User's Guide. Brightness temperature accuracies appear to be about ± 2° to 5° K.

Table 4-4 of The Nimbus 5 User's Guide, "ESMR Antenna Loss Ratio-Flight Model," will not be supplied. The antenna properties changed after final calibration and rendered these numbers useless. A set of empirical calibration numbers is being developed which will correct for the effects of antenna loss and side lobes, and the effect of different viewing angles. This will be published in a later catalog.

1.5 The Infrared Temperature Profile Radiometer (ITPR) Experiment*

During orbit 3 the ITPR was turned on and commanded to the scan mode. Within the remaining portion of orbit 3 the instrument became thermally stable except for the scan motor temperature, which continued to increase until orbit 53. The scan drive assembly operated perfectly until orbit 50, when scan errors were detected. Due to the erratic behavior of the scan mechanism, the instrument was commanded to nadir position during orbit 53 and remained in this mode through orbit 326. For the remaining portion of the report period, several modes of operation were used, during which the scan drive assembly operated with a reduced duty cycle. The modes of operation are summarized in Table 1-3.

With the exception of the scan mechanism, the ITPR performance has been excellent. The thermal stability has been good, with the thermally controlled portions of the instrument maintained within the specified temperature range. The stability of

*Contributed by H. Howell of NESS/NOAA

the detector and chopper reference blackbody temperatures for the entire report period insure the validity of the new calibration constants given in Table 5-3, Section 5, of this Catalog.

The instrument response during the fixed space view indicates that the ITPR field of view in that portion is slightly obscured. The problem is alleviated by using the position adjacent to the space position (toward nadir) as the actual space view, i.e., the instrument response from this view indicates a lower scene temperature. The magnitude of error in the space view is approximately two percent and appears to be diminishing with time.

The data quality is excellent and there is no apparent degradation with time. Data archival for the report period will include most orbits from 12 through 693 with the exception of the following orbits: 123-146, 201-208, 310-314, 357-370.

Table 1-3

ITPR SCAN MODES

DATES	ORBITS	OPERATION
11 Dec-15 Dec	4A*-53R**	Normal 3-grid scan.
15 Dec- 4 Jan	53R-327A	Scan off, viewing nadir only.
4 Jan- 5 Jan	327A-340R	Alternately scanning grid 1 and viewing nadir.
5 Jan-10 Jan	340A-406A	Scanning all grids from 30°S to 30°N, viewing nadir for the remaining part of each orbit.
10 Jan-11 Jan	406A-424A	Scanning all grids from 60°S to 20°S and 20°N to 60°N, viewing nadir at other times.
11 Jan-24-Jan	424A-596A	Scan off, viewing nadir only (due to scan problems detected in orbit 424).
24 Jan-27 Jan	596A-638A	Alternately scanning grid 1 and viewing nadir.
27 Jan-31 Jan	638A-693	Scan off, viewing nadir only,

*A = Fairbanks, Alaska

**R = Rosman, North Carolina

Figure 1–4. Nimbus 5 ESMR Montage Pr pared from Swath 2 Data (190° to 250°K) Recorded on 11 January 1973 (Orbits 413 to 425).

1.6 The Selective Chopper Radiometer (SCR) Experiment

The SCR performance has been satisfactory through the end of this catalog period. Stray radiation levels and subsystem noise have remained reasonably constant since launch. Housekeeping telemetry values have remained at their prelaunch levels and subsystem average orbital temperatures agree favorably with the predicted values.

Gains on channel B, C, and D, calculated from inflight calibrations, have remained unchanged since sensor thermal equilibrium was achieved. The A group gains increased up to orbit 130, because of slight CO_2 outgassing, but have remained almost unchanged since then. Analysis has shown that the gains are very stable throughout an orbit and that the three inflight calibration cycles each orbit are sufficient gain checks.

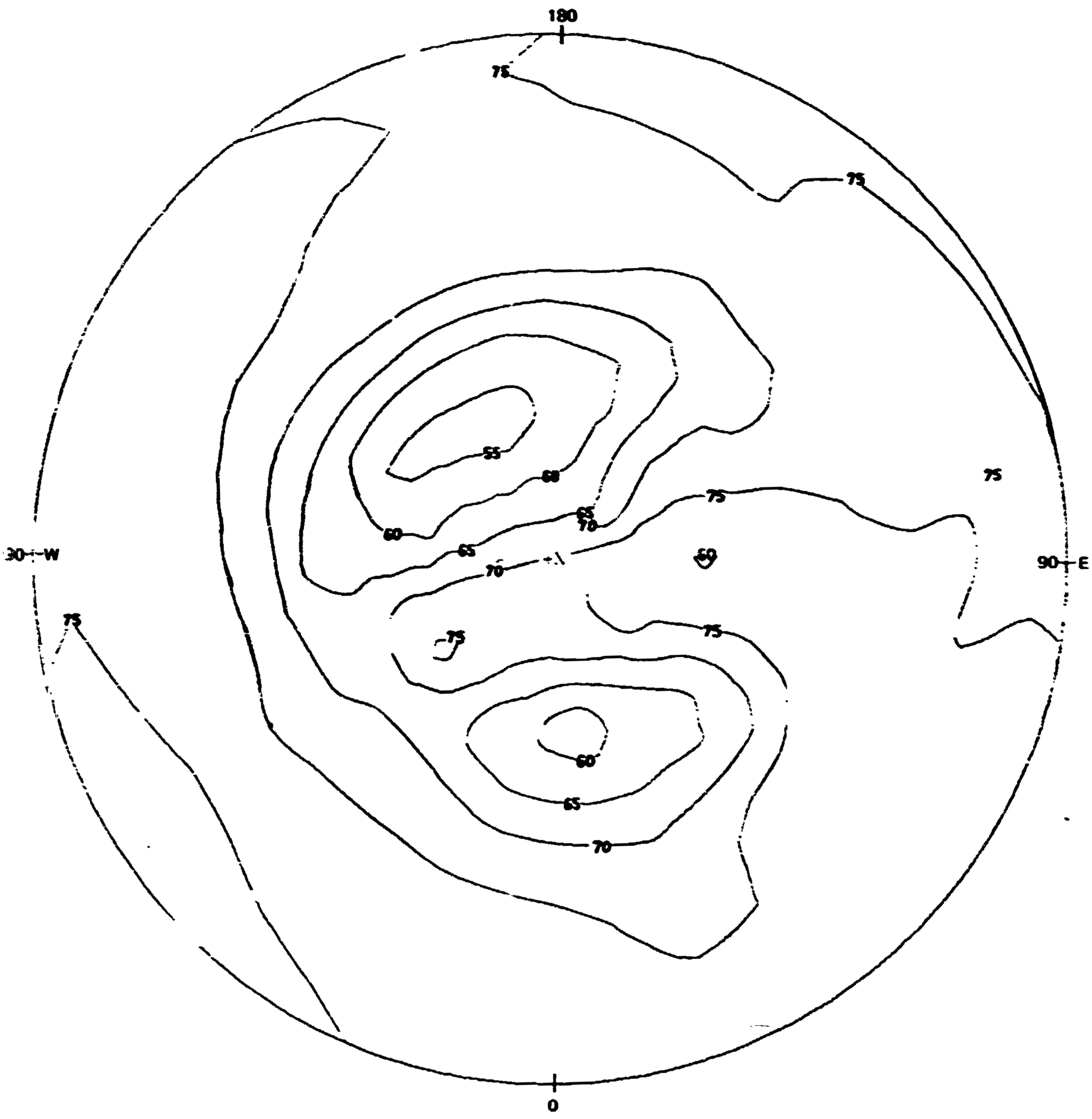
Between South America and Africa, in the region of the South Atlantic Anomaly, the high radiation flux affects the data from channels B and C. The greatest effect is seen on the C1 and C2 channels; a lesser effect on the B group. The interference appears as spikes on the data, most of which can be removed in the data processing.

Reflected sunlight and earth albedo degrade the data from channels D1, D2, and D3 during calibration sequences while the instrument is in high gain. However, during normal gain the effect is negligible.

About every 400 revolutions, moonlight enters the space-reference port on each orbit for about two days, causing a negative shift of the D3 channel high gain data, including the inflight calibrations, throughout each orbit. This phenomenon first occurred about orbit 200. Moonlight, sunlight, and earth albedo have no apparent effect on the D group channels while in normal gain.

The SCR data is transmitted daily from GSFC to Oxford, England, where routine processing is carried out. Contoured charts of radiance (in ergs) for the difference B channels and A channels are prepared from each 24 hours of data.

During this catalog period, a series of stratospheric warmings occurred in the northern hemisphere. Figures 1-5, 1-6, and 1-7 illustrate the development of such warming during a period of maximum activity. On January 17 the radiance field at the level of the channel B1, B2 (about 1.6 mb or 45 km) was dominated by a wave number 2 pattern near the Pole (Figure 1-5). On January 24 the two cold regions had shifted to the east and were located over northern Canada and Mongolia and a tongue of warm air extended over Europe to northern Siberia (Figure 1-6). The disturbance subsequently increased in amplitude until the maximum zonal variation occurred on January 28th. During this period the two cold areas combined and the region of maximum heating moved to a position over northwestern Russia (Figure 1-7). This single wave number 1 pattern subsequently reverted to shorter wavelengths as the warming dissipated.



Figur. 1-5. Northern Hemisphere Radiance Field (in Ergs) for 17 January 1973 Derived from SCR Channel B1B2 Data (about 1.6 mb or 45 km).

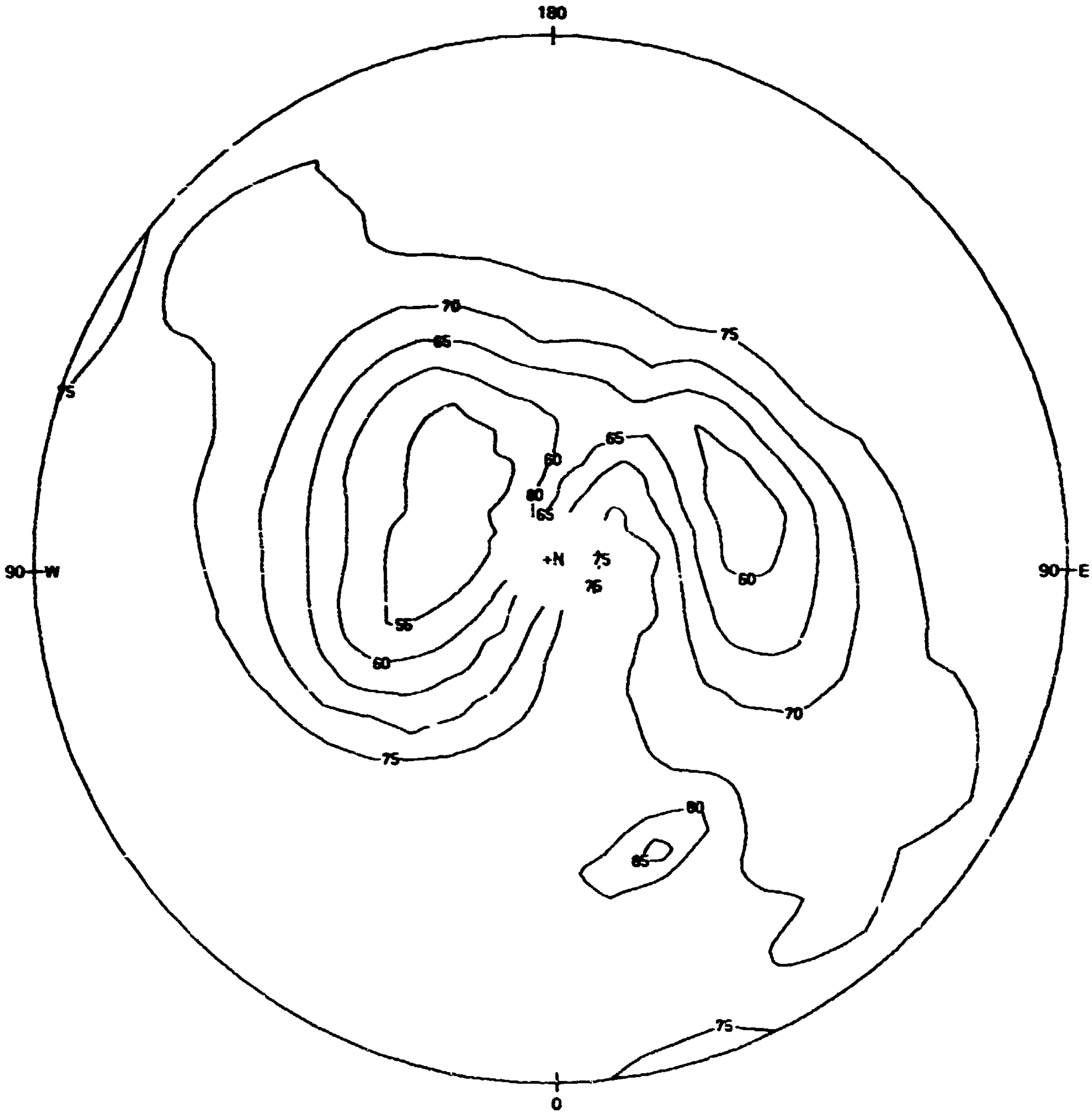


Figure 1-6. Northern Hemisphere Radiance Field (in Ergs) for 24 January 1973
Derived from SCR Channel B1B2 Data (about 1.6 mb or 45 km).

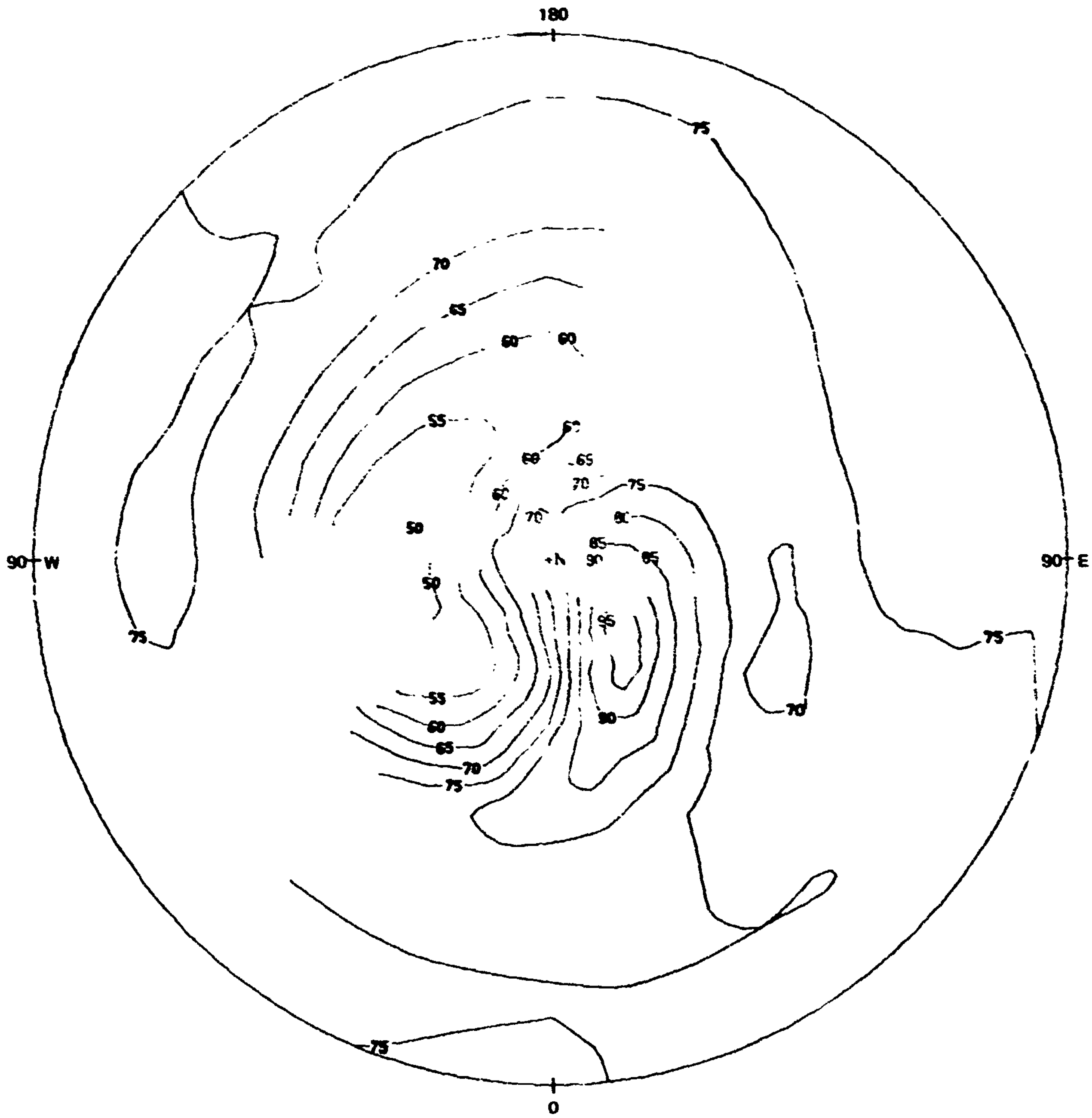


Figure 1-7. Northern Hemisphere Radiance Field (in Ergs) for 28 January 1973 Derived from SCR Channel B1B2 Data (about 1.6 or 45 km).

Similar activity was observed on the lower channels, with the wave pattern shifting eastward on each successive level downward in the atmosphere. The greatest change, corresponding to an increase of 10°K in one day, was observed on channel B2 and B3 between January 27 and 28.

1.7 The Nimbus E Microwave Spectrometer (NEMS) Experiment*

The NEMS experiment is the first step in the application of the microwave spectrum to global sensing of atmospheric temperature structure. The instrument yields unique information about the atmospheric humidity and cloud water content over the oceans, and some parameters of snow cover, ice type, soil moisture, sea state, etc. The instrument views nadir continuously with a spatial resolution of approximately 170 km, and measures the thermal radiation at 22.235, 31.4, 53.65, 54.9, and 58.8 GHz with a sensitivity of about 0.1° to 0.2°K for a 16-second integration period.

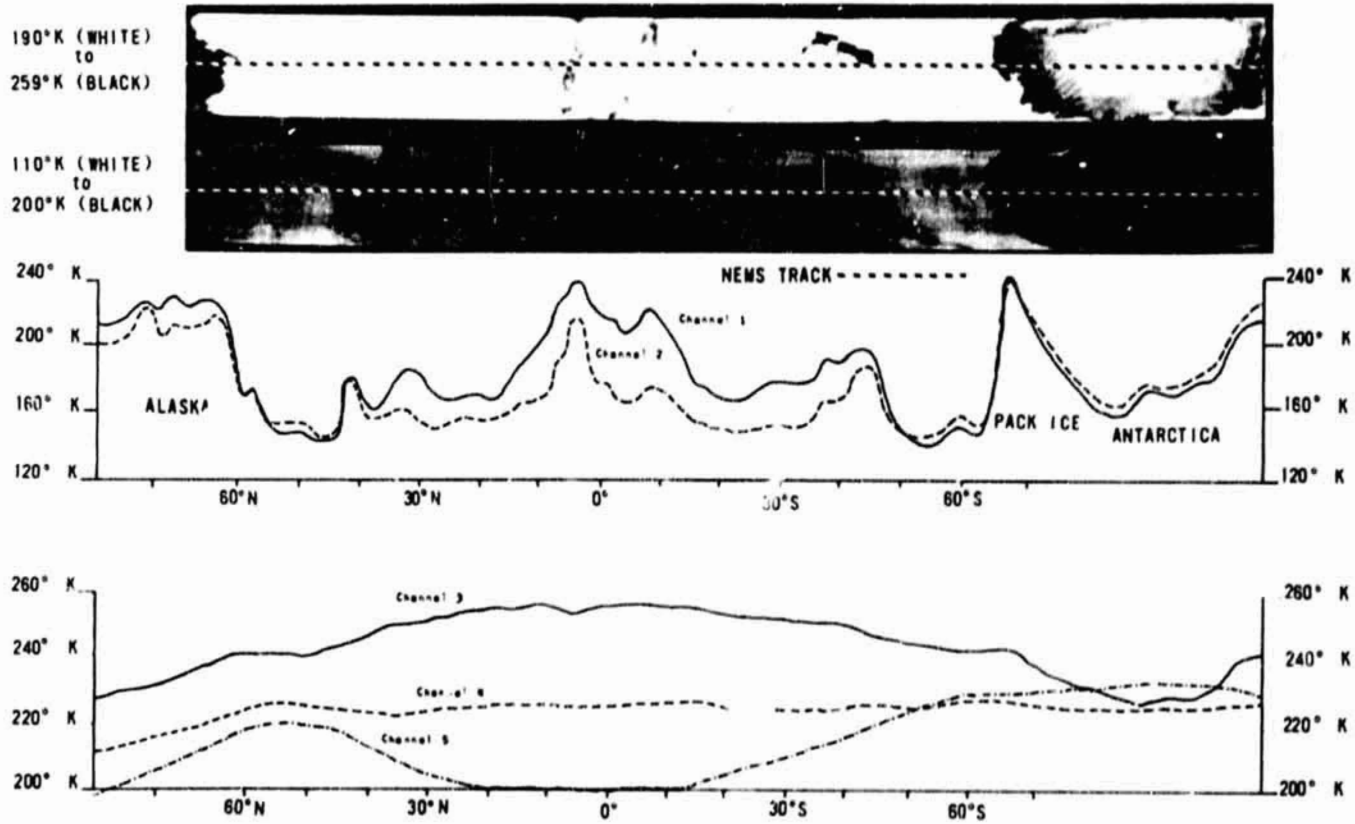
Since launch, 11 December 1972, the instrument has operated continuously without difficulty or degradation.

In Figures 1-8, 1-9, and 1-10 are plotted antenna temperatures (radiances) for several orbits. Channels 1 through 5 are numbered in order of increasing frequency. The data shown in Figure 1-8, illustrates several phenomena. For example, the Arctic and Antarctic are evident as high temperature regions in channels 1 and 2. Two unexpected phenomena are evident in these polar regions, (1) the center of the Antarctic radiates remarkably little microwave energy in channels 1 and 2 (the antenna temperatures are approximately 160°K, far colder than anything observed in the Arctic), and (2) the spectral properties of the ice and snow in the Arctic and Antarctic are different. In the north, channel 2 readings are everywhere colder than channel 1, whereas in the Antarctic, the channel positions are reversed. These spectral properties, which vary from place to place should provide new information about the distribution of various types of ice.

Also evident, in the center of the scan in Figure 1-8, are the humid tropical regions over the Pacific Ocean. The integrated water vapor density is approximately proportional, over ocean, to the spread between channels 1 and 2. The liquid water content is approximately proportional to the displacement of channel 2 values from ocean values in the ice-free area of the Arctic. The intertropical convergence zone (ITCZ), marked by strong rain bands and high humidity, is evident in channels 1 and 2 near the equator.

The temperature sounding experiment, involving channels 3, 4, and 5, is also quite successful. Weighting functions for channel 3, 4, and 5 peak near 4, 11, and 18

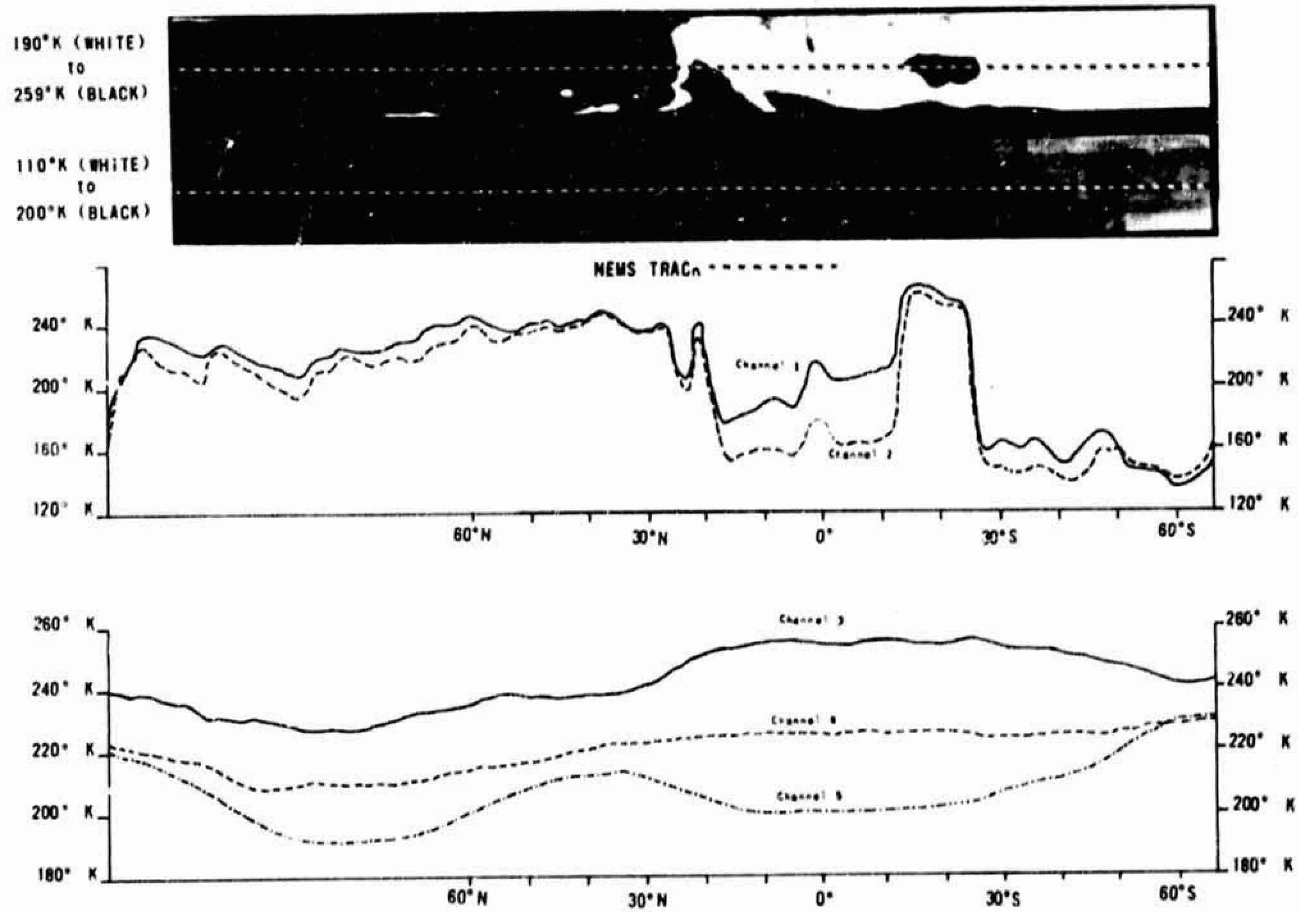
*Contributed by Dr. David H. Staelin, MIT, Cambridge, Mass.



Displayed is brightness temperature data for 23 December 1972 from the two Nimbus 5 microwave experiments. Both detect atmospheric water vapor and rainfall areas over oceans. In the Electrically Scanning Microwave Radiometer (ESMR) images, rainfall areas over oceans appear quite dark, while the areas of atmospheric water vapor have intermediate shades of gray. Channel 1 of the Nimbus E Microwave Spectrometer (NEMS) is used to estimate the water vapor density over oceans; channel 2 is used to estimate the atmospheric liquid water content over oceans. NEMS channels 3, 4, and 5 are used for temperature sounding, and peak near 4, 11, and 18 km altitudes, respectively. Note that clouds have almost no perturbing effect on the atmospheric temperature values sensed by these three channels. In these channels temperatures vary smoothly along the orbit. As an example, the frontal system near 40 degrees north is seen on channels 1 and 2 to contain considerable liquid water, but introduces no observable change in channel 3.

The sensor coverage extends from Alaska, southward past New Zealand, and across Antarctica. Pack ice near Antarctica appears black on the top ESMR image and as temperatures near 240 degrees Kelvin on channels 1 and 2 of the NEMS.

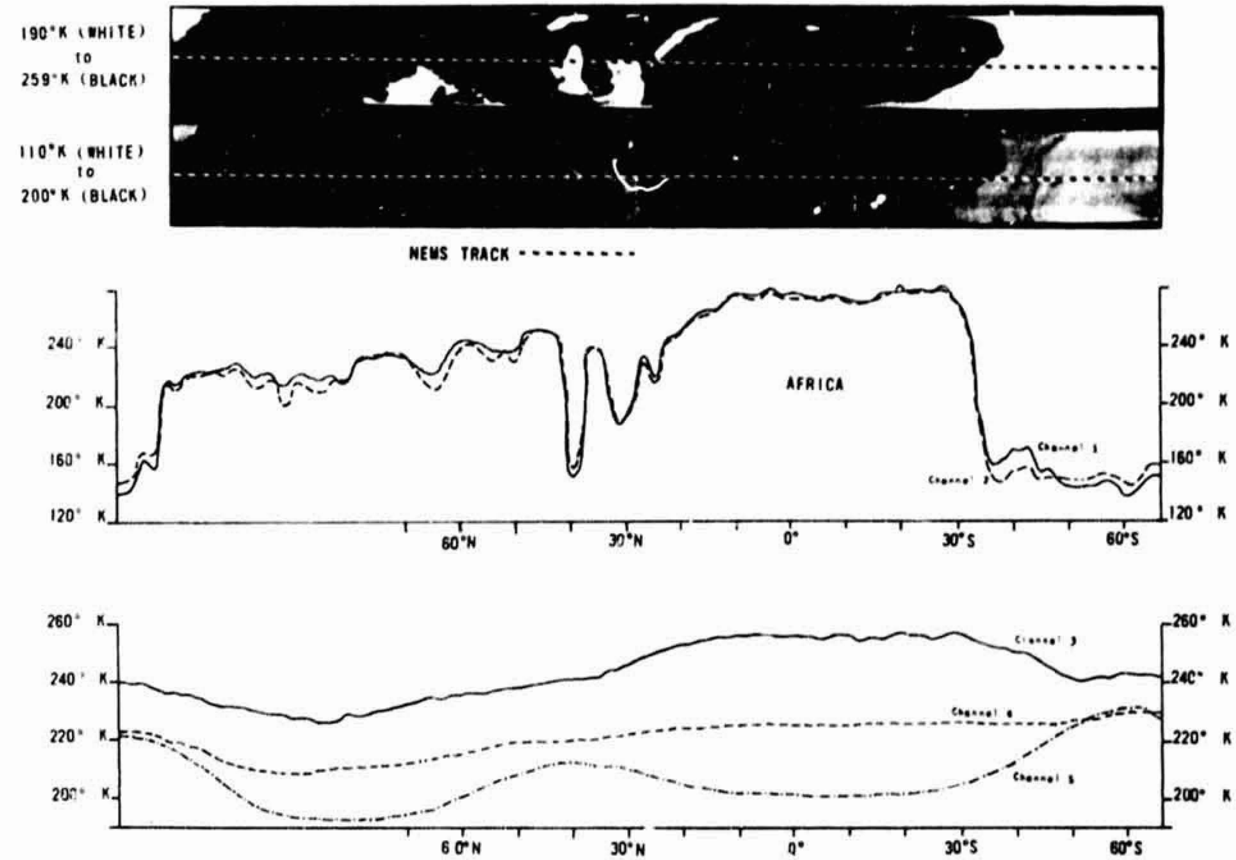
Figure 1-8. NEMS Brightness Temperature Profiles and Corresponding ESMR Images Recorded on 23 December 1972.



Displayed is brightness temperature data for 26 December 1972 from the two Nimbus 5 microwave experiments. Both detect atmospheric water vapor and rainfall areas over oceans. In the Electrically Scanning Microwave Radiometer (ESMR) images, rainfall areas over oceans appear quite dark while the areas of atmospheric water vapor have intermediate shades of gray. Channel 1 of the Nimbus E Microwave Spectrometer (NEMS) is used to estimate the water vapor density over oceans; channel 2 is used to estimate the atmospheric liquid water content over oceans. NEMS channels 3, 4, and 5 are used for temperature sounding, and peak near 4, 11, and 18 km altitudes, respectively. Note that clouds have almost no perturbing effect on the atmospheric temperature values sensed by these three channels. In these channels temperatures vary smoothly along the orbit.

After passing over Asia, the sensor observed the Indian Ocean almost parallel to the African coast. Particularly interesting are the readings of NEMS channels 1 and 2 as the spacecraft passes over land

Figure 1-9. NEMS Brightness Temperature Profiles and Corresponding ESMR Image Recorded on 26 December 1972.



Displayed is brightness temperature data for 26 December 1972 from the two Nimbus 5 microwave experiments. Both detect atmospheric water vapor and rainfall areas over oceans. In the Electrically Scanning Microwave Radiometer (ESMR) images, rainfall areas over oceans appear quite dark, while the areas of atmospheric water vapor have intermediate shades of gray. Channel 1 of the Nimbus F Microwave Spectrometer (NEMS) is used to estimate the water vapor density over oceans; channel 2 is used to estimate the atmospheric liquid water content over oceans. NEMS channels 3, 4, and 5 are used for temperature sounding, and peak near 4, 11 and 18 km altitudes, respectively. Note that clouds have almost no perturbing effect on the atmospheric temperature values sensed by these three channels. In these channels temperatures vary smoothly along the orbit.

The sensor coverage extends across Asia, eastern Europe and down almost the entire length of Africa, to about 70 degrees south. Of interest is the variation in brightness temperature recorded by the NEMS channels 1 and 2 as the spacecraft crossed the Black Sea and Turkey, and grazed the eastern end of the Mediterranean Sea and the northern end of the Red Sea.

Figure 1-10. NEMS Brightness Temperature Profiles and Corresponding ESMR Images Recorded on 26 December 1972.

km altitudes, respectively. A major concern has been whether the microwave temperature soundings would be perturbed by clouds, but the only such perturbations that are evident are the small deflections of channel 3 which occur over the center of the ITCZ. These deflections of channel 3 are on the order of 0° to 4°K, and are of short duration. No evidence now exists of such perturbations outside the tropics. The brightness temperatures of channels 3, 4, and 5 vary quite smoothly from point to point; most major variations have scale sizes of a few thousand kilometers.

In Figure 1-11 are plotted layer thicknesses inferred from channels 3, 4, and 5 for orbit 166. The 1000-500 mb thickness curve is compared with one generated by the National Weather Service for 1200 GMT, approximately four hours earlier. The difference is never more than 3°K, despite the time difference and the fact that the NEMS results are preliminary. It is very interesting to observe that the microwave data shows the 1000-500 mb and 250-50 mb portions of the atmosphere, between 20°N and 10°S, to be the same within about 1°K peak-to-peak, implying great accuracy for the NEMS measurements of temperature gradients. This accuracy may be sufficient to observe the tropical meteorological dynamics.

In Figure 1-12 are plotted three NEMS-inferred temperature profiles, together with the corresponding 1200 GMT NOAA grid interpolation. These results are quite reasonable, particularly since the calibration constants have not yet been fully revised by comparison of NEMS brightness temperatures with those calculated for coincident meteorological measurements.

Computer program development is proceeding well. Version 1 of α, β, and γ are fully written, and are almost operational. The α program is for instrument diagnosis and calibration; β is for data interpretation and produces the NEMS Output Tape (NEMSOT) for data archival at NSSDC, and γ is for data interpretation. After γ is operational and more data is available, work on evaluating the NEMS accuracy and meteorological significance should make significant progress. The format for NEMSOT (page 156, The Nimbus 5 User's Guide) is nearing final form and will be available in a later Data Catalog.

Co-investigation for NEMS includes F. T. Barath, A. H. Barrett, N. E. Gaut, W. B. Lenoir, W. Nordberg, P. W. Rosenkranz, and J. W. Waters.

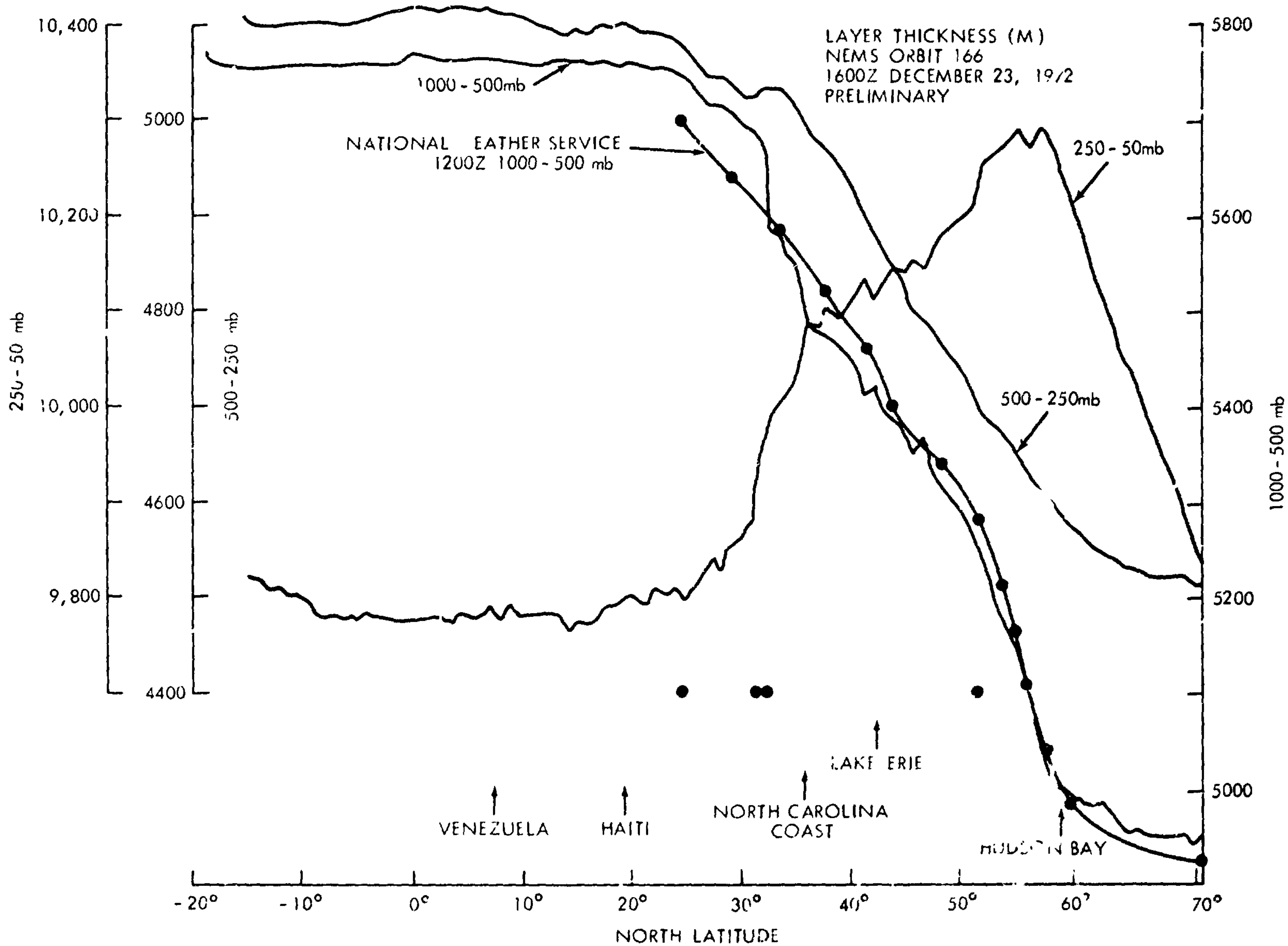


Figure 1-11. Three NEMS Derived Layer Thicknesses and a Comparable National Weather Service 1000-500 mb Layer Thickness.

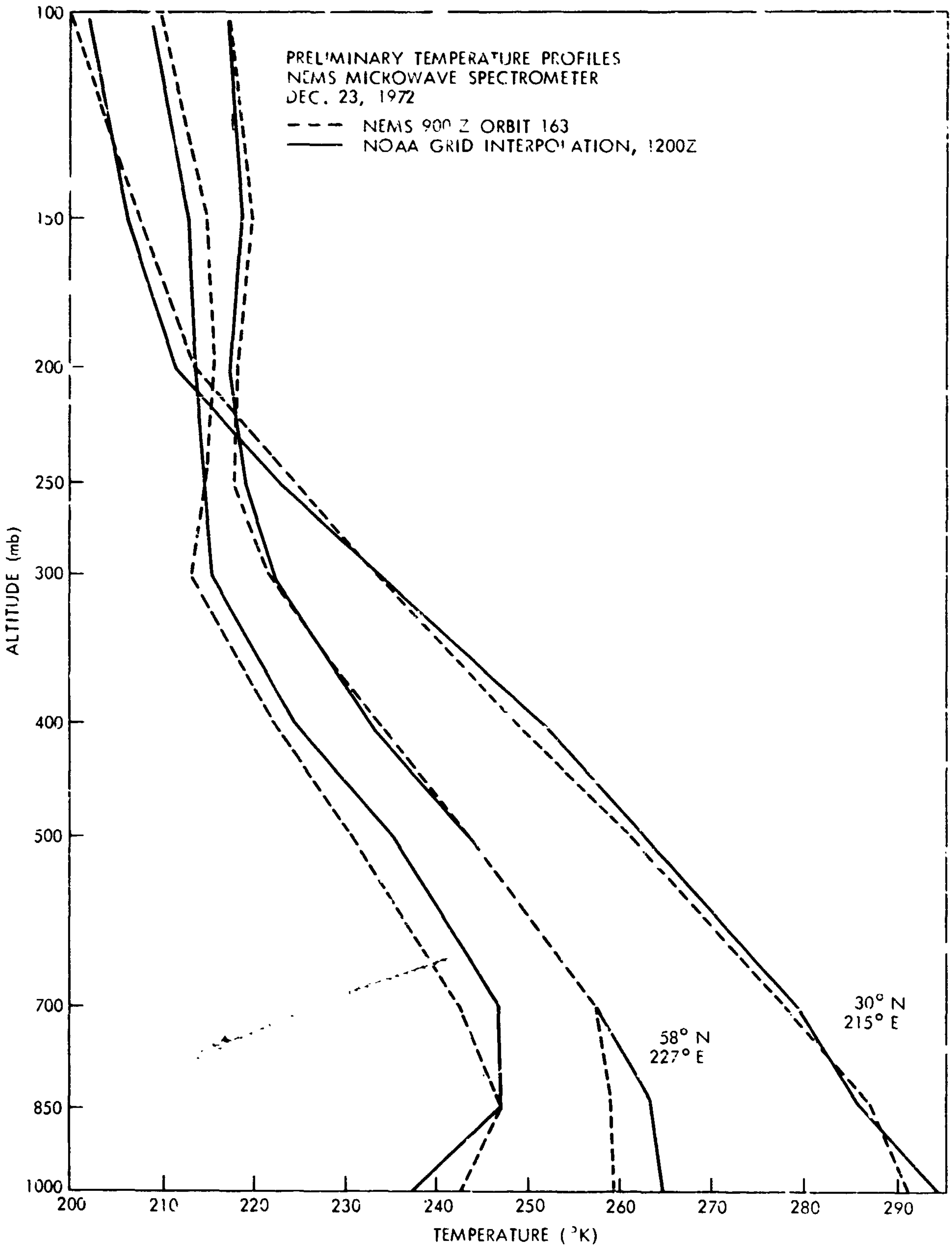


Figure 1-12. Comparison of NEMS Derived Temperature Profiles with NOAA Grid Interpolations.

SECTION 2

THE ORBITAL ELEMENTS AND DATA AVAILABILITY ON-OFF TIMES

The Nimbus 5 Brouwer Mean orbital elements for December 1972 and January 1973 are listed in Table 2-1.

The data availability on-off times (Table 2-2) list the times when the data from each instrument was recorded on a HDRSS.

THIR orbital coverage in Table 2-2 is divided between daytime and nighttime data. The THIR data is normally recorded simultaneously from both 6.7μm and 11.5μm channels. Therefore, the listed on-off times apply to both channels. In the few cases where the 6.7μm channel has times different from the 11.5μm channel, the time corrections are indicated by asterisks.

A THIR data orbit is defined as beginning and ending at the night-day terminator. Thus, the daytime data orbit extends from the night-day terminator to the day-night terminator. Each daytime THIR data orbit is assigned the orbit number of the ascending node which occurs during that portion of the orbit. The same orbit number is assigned also to the succeeding nighttime data orbit.

The "INT ORBIT & STDN" identify the orbit in which the satellite is interrogated and the ground station to which the satellite data is transmitted. The letter "R" denotes Rosman, North Carolina; the letter "A" denotes Fairbanks, Alaska.

The "HDRSS" identifies the stateellite tape recorder, either A or B.

The "THIR GRID CORR" columns are used to indicate an image grid error in latitude and longitude whenever either is in error by more than one degree of great circle arc (60 n. m.). Latitude errors are suffixed by an N or S; longitude errors, by an E or W. An N or S indicates the <u>grid</u> should be moved up or down by the amount shown to obtain a good fit of the grid to the geography. An E or W indicates the <u>grid</u> should be moved right or left, at the equator, by the amount shown.

Ascending node times and longitudes are the times and longitudes at which the satellite crosses the equator in the northbound direction. These crossings always occur during the daytime portion of the orbit. The descending nodes and times refer to the southbound crossings, which occur during the nighttime portion of the orbit.

ESMR, NEMS, SCR, and ITPR are normally on all the time. Their sensory information is recorded on a HDRSS between interrogations, and their on-and-off times define the total record times between interrogations. An interrogation orbit is the orbit during which previously recorded data is transmitted to a ground station. This data will be from segments of two or more data orbits as defined above for THIR. To determine the orbital coverage of the data from any interrogation, the on-and-off times should be matched with the appropriate ascending or descending node listed with the THIR information on the same page of Table 2-2. Coverage can then be determined as described below.

The "DATA ORBIT" indicator in the ESMR table is given only for reference purposes. It is the number which appears on the data display image, samples of which are reproduced in Section 3, and identifies the last data orbit on each display. It should not be confused with the THIR data orbit number.

Table 2-2 together with the World Map (Figure 2-1) and the vellum Subsatellite Tracks Overlay attached to the back of this catalog, can be used to determine approximate geographic coverages.

A Subsatellite Tracks Overlay is correctly oriented with the World Map when the ascending or descending node line on the overlay coincides with the 0-degree latitude (equator) line of the World Map. Orbital coverage is determined by placing an orbit track on the world map at the appropriate ascending node (for daytime) or descending node (for nighttime) longitude for the orbit of interest.

The Subsatellite Tracks Overlay contains 14 correctly spaced tracks, which end at the approximate earth day-night transitions. The tracks contain time ticks spaced 5 minutes apart, appropriately annotated at the edge of the overlay, referenced from the equator. Times in minutes from equator crossings for all or part of a particular orbit are calculated by adding to or subtracting from the ascending or descending node time listed for that orbit in the Data Availability On-Off Times Table.

The nature and format of the data to be available from each experiment are explained in detail in the respective sections of The Nimbus 5 User's Guide. The appropriate sources for requesting the various data types are listed in Section 1.7 of the same manual.

Table 2-1

NIMBUS 5 BROUWER MEAN ORBITAL ELEMENTS FOR DECEMBER 1972 AND JANUARY 1973

Epoch	Universal Time	21 Dec 1972 00 00 00	10 Jan 1973 00 00 00	22 Jan 1973 00 00 00
Validity Period	Universal Time	FR 16 Dec 1972 00 00 00 TO 31 Dec 1972 23 50 00	FR 1 Jan 1973 00 00 00 TO 15 Jan 1973 23 50 00	FR 16 Jan 1973 00 00 00 TO 31 Jan 1973 23 50 00
Semi-Major Axis	Km	7473.5985	7473.5940	7473.5909
Eccentricity		.0008128	.0008575	.0008868
Inclination	Degrees	99.950	99.950	99.950
Argument of Perigee	Degrees	211.634	162.615	133.971
Right Ascension of Ascending Node	Degrees	262.149	281.870	293.708
Mean Anomaly	Degrees	224.676	81.383	138.611
Height of Perigee	Km	1089.36	1089.02	1088.80
Height of Apogee	Km	1101.56	1101.84	1102.02
Anomalistic Period	Minutes	107.1648	107.1647	107.1646
Motion of Perigee	Deg. per day	2.4334	2.4334	2.4334

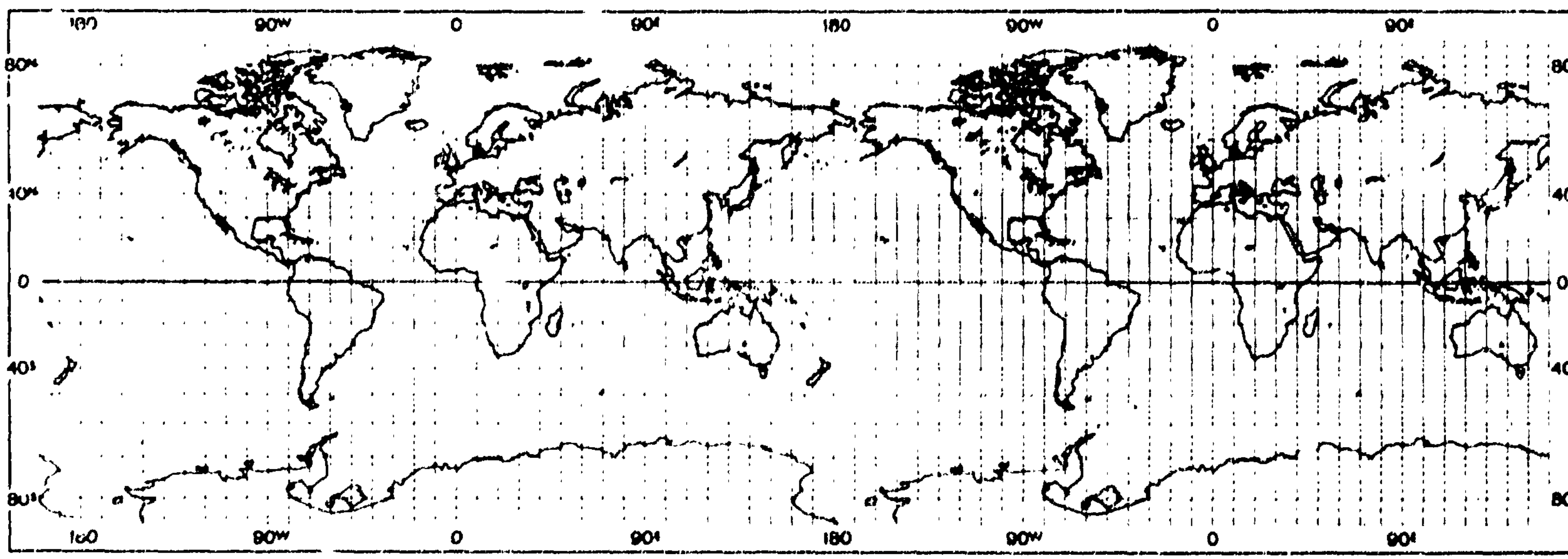


Figure 2-1. World Map

TABLE 2-2
DATA AVAILABILITY ON-OFF TIMES
19 DECEMBER 1972

THIR

DATA ORBIT	11.5 + 6.7 ON HRMN	OFF HRMN	INT ORBIT + STDN	HDRS	THIR GRID CORR LALO	ASC. AND DESC. NODE TIME HRMNSS	LONG DEG
		DAYTIME THIR				ASC. NODE	
104						010803	E155.9
105						025522	E128.7
106	0411	0459	106R	B		044239	E101.9
107	0558	0646	107R	B	10W	062955	E075.1
108	0745	0834	108A	A		081712	E048.2
109	0932	1021	109A	B		100429	E021.4
110	1120	1208	110A	A		115145	W005.4
111	1307	1355	111A	B		133902	W032.2
112	1454	1543	112A	A		152618	W059.0
113	1641	1730	113A	B		171335	W085.9
114	1829	1917	114A	B		190051	W112.7
115	2016	2105	115A	A		204808	W139.5
116	2203	2252	116A	A		223525	W165.3
		NIGHTTIME THIR				DESC. NODE	
104						020142	W037.9
105	0326	0411	106R	B		034858	W064.9
106	0459	0519	106R	B		053615	W091.5
106	0524	0558	107R	B	10W		
107	0646	0708	107R	B	10W	072331	W118.4
107	0707	0745	108A	A			
108	0834	0848	108A	A		091048	W145.2
108	0847	0932	109A	B			
109	1021	1036	109A	B		105805	W172.8
109	1034	1120	110A	A			
110	1208	1221	110A	A		124521	E161.2
110	1220	1307	111A	B			
111	1355	1405	111A	B		143238	E134.4
111	1405	1454	112A	A			
112	1550	1641*	113A	B		15[illegible]54	E107.6
113	1735	1829	114A	B		180711	E080.8
114	1918	2016	115A	B		195427	E053.9
115	2107	2203	116A	B		214144	E027.1
116						232901	E000.3

*6.7 CHANNEL ON-OFF DIFFERENCE

112	1543	1641	113A	B

ESMR

DATA ORBIT	ON HRMN	OFF HRMN	INT ORBI. + STDN	HJRS
106	0326	[illegible]	106R	B
107	0526	0648	107R	B
108	0710	0849	108A	A
109	0852	1037	109A	B
110	1030	1222	110A	A
111	1224	1406	111A	B
112	1408	1549	112A	A
113	1552	1735	113A	B
114	1736	1918	114A	A
115	1921	2107	115A	B
116	2107	2253	116A	A

NEMS - SCR - ITPR

0326	0522	106R	B
0526	0709	107R	B
0707	0849	108A	A
0847	1037	109A	B
1034	1222	110A	A
1219	1406	111A	B
1405	1549	112A	A
1550	1735	113A	B
1735	1918	114A	A
1918	2106	115A	B
2107	2253	116A	A

TABLE 2-2
DATA AVAILABILITY ON-OFF TIMES
20 DECEMBER 1972

THIR

DATA ORBIT	11.5 + 6.7 ON HRMN	OFF HRMN	INT ORBIT + STDN	H D R S	THIR GRID CORR LALO	ASC. AND DESC. NODE TIME HRMNSS	LONG DEG
	DAYTIME THIR					ASC. NODE	
117						002241	E166.9
118	0138	0226	119R	B		020958	E140.0
119	0325	0414	119R	A		035714	E113.2
120	0512	0601	120R	A		054431	E086.4
121	0700	0748	121A	B		073149	E059.6
122	0847	0935	122A	A		091904	E032.8
122	0935	0958	122A	A			
123	1034	1123	123A	B		110621	E006.0
124	1222	1310	124A	A		125337	W020.9
125	1409	1457	125A	B		144954	W047.7
126	1556	1645	126A	A		162610	W074.5
127	1743	1832	127A	B		181527	W101.3
128	1931	2020	128A	A		200244	W128.2
129	2118	2206	129A	B		215000	W155.0
130	2305	2354	136A	A		233717	E178.2
	NIGHTTIME THIR					DESC. NODE	
117	0043	0136	119R	H		011617	W026.5
118	0226	0242	119R	-		030334	W053.4
118	0242	0325	119R	A			
119	0414	0436	119R	A		045050	W080.2
119	0442	0512	120R	A			
120	0601	0624	120R	A		063007	W107.0
120	0624	0700	121A	B			
121	0748	0804	121A	B		082524	W133.8
121	0810	0847	122A	A			
122	0949	1034	123A	B		101240	W160.6
123	1123	1138	123A	B		115957	E172.5
123	1143	1222	124A	A			
124	1310	132.	124A	A		134713	E145.7
124	1322	1409	125A	B			
125	1457	1506	125A	B		153430	E118.9
125	1508	1556	126A	B			
126	1650	1743	127A	B		172146	E092.1
127	1833	1931	128A	A		190903	E065.3
128	2020	2118	129A	B		205620	E038.4
129	2209	2305	136A	A		224336	E011.6
130	2354	0006	136A	A		003053	W015.2

ESMR

DATA ORBIT	ON HRMN	OFF HRMN	INT ORBIT + STDN	H D R S
118	0043	0242	119R	B
119	0242	0437	119R	A
120	0442	0625	120R	A
121	0626	0805	121A	B
122	0811	0951	122A	A
123	0953	1139	123A	B
124	1139	1322	124A	A
125	1324	1508	125A	B
126	1508	1650	126A	A
127	1652	1832	127A	B
128	1837	2021	128A	A
129	2022	2209	129A	B
130	2209	0008	136A	A

NEMS - SCR - ITPR

ON HRMN	OFF HRMN	INT ORBIT + STDN	H D R S
0043	0242	119R	A
0242	0438	119R	B
0442	0624	120R	A
0624	0805	121A	B
0811	0951	122A	A
0949	1139	123A	B **
1135	1322	124A	A **
1322	1508	125A	B **
1509	1650	126A	A **
1650	1833	127A	B **
1833	2021	128A	A **
2021	2209	129A	B **
2209	0009	135A	A **

**ITPR DATA IS NOT AVAILABLE FOR THESE ORBITS.

TABLE 2-2
DATA AVAILABILITY ON-OFF TIMES
21 DECEMBER 1972

THIR

DATA ORBIT	11.5 + 6.7 ON HRMN	11.5 + 6.7 OFF HRMN	INT ORBIT + STDN	K D R S	THIR GRID CORR LALO	ASC. AND DESC. NODE TIME HRMNSS	ASC. AND DESC. NODE LONG DEG
	DAYTIME THIR					ASC. NODE	
131						012433	E151.4
132	0240	0328	132R	B	2E	031159	E124.6
133	0427	0516	134A	B		045907	E097.3
134						064623	E070.9
135	0802	0850	135A	B	2N	083348	E044.1
136	0949	1037	136A	B		102056	E017.3
137	1136	1225	137A	A		120813	W009.5
138	1323	1412	138A	B		136529	W036.3
139	1511	1559	139A	A		154246	W063.2
140	1658	1746	140A	B	2N	173003	W090.0
141	1845	1934	141A	A		191719	W116.8
142	2032	2120	142A	B		210436	W143.6
143	2220	2308	143A	A		225152	W170.4
	NIGHTTIME THIR					DESC. NODE	
131	0156	0240	132R	B	2W	021809	W042.0
132	0328	0346	132R	B	2W	040526	W068.8
132	0400	0427	134A	B			
133	0516	0602	134A	B		055242	W095.7
134	0742	0802	135A	B		073959	W122.5
135	0850	0905	135A	B		092716	W149.3
135	0911	0949	136A	B	2S		
136	1037	1049	136A	B	2S	111412	W176.1
136	1059	1136	137A	A			
137	1225	1237	137A	A		130149	E157.1
137	1235	1323	138A	B			
138	1412	1419	138A	B		144905	E130.3
138	1420	1511	139A	A			
139	1559	1604	139A	A		163622	E103.5
139	1605	1658	140A	B	2S		
140	1750	1845	141A	A		182338	E076.6
141	1934	2032	142A	B		201055	E049.8
142	2121	2220	143A	A		215812	E022.9
143						234528	W003.6

ESMR

DATA ORBIT	ON HRMN	OFF HRMN	INT ORBIT + STDN	K D R S
132	0156	0352	132R	B
133	0400	0600	134A	B
135	0724	0906	135A	B
136	0911	1051	136A	B
137	1059	1238	137A	A
138	1240	1420	138A	B
139	1424	1605	139A	A
140	1608	1750	140A	B
141	1752	1935	141A	A
142	1937	2119	142A	B
143	2124	2309	143A	A

NEMS - SCR - ITPR

ON HRMN	OFF HRMN	INT ORBIT + STDN	K D R S
0157	0352	132R	B **
0400	0602	134A	B **
0725	0906	135A	B **
0911	1050	136A	B **
1059	1238	137A	A **
1235	1420	138A	B **
1420	1605	139A	A **
1605	1750	140A	B **
1750	1935	141A	A **
1934	2119	142A	B **
2121	2309	143A	A **

**ITPR DATA IS NOT AVAILABLE FOR THESE ORBITS.

TABLE 2-2
DATA AVAILABILITY ON-OFF TIMES
22 DECEMBER 1972

THIR

DATA ORBIT	11.5 + 6.7 ON HRMN	OFF HRMN	INT ORBIT + STDN	H D R S	THIR GRID CORR LALO	ASC. AND DESC. NODE TIME HRMNSS	LONG DEG
	DAYTIME THIR					ASC. NODE	
144	0050	0056	146R	B		003909	E162.7
145	0154	0243	146R	B		022626	E135.9
146	0342	0430	146R	A		041342	E109.1
147	0529	0617	147R	A		060059	E082.3
148	0716	0805	148A	B		074815	E055.5
149	0903	0952	149A	A	1S	093532	E028.7
150	1051	1139	150A	B	1S2E	112243	E001.9
151	1238	1326	151A	A		131005	W025.0
152	1425	1514	152A	B		145722	W051.8
153	1612	1701	153A	A		164438	W078.6
154	1800	1848	154	B	2E	183155	W105.5
155	1947	2035	155A	A		201911	W132.3
156	2134	2222	156	B		220628	W159.1
157	2322	0010	160R	B		235345	E174.1
	NIGHTTIME THIR					DESC. NODE	
144	0056	0154	146R	B		013245	W030.6
145	0243	0251	146R	B		032001	W057.5
145	0257	0342	146R	A			
146	0430	0452	146R	A		050718	W084.3
146	0459	0529	147R	A			
147	0617	0641	147R	A		065435	W111.1
147	0641	0716	148A	B			
148	0805	0820	148A	B		084151	W137.9
148	0820	0903	149A	A	1N		
149	0952	1003	149A	A	1N	102908	W164.8
149	1003	1051	150A	B	1N2W		
150	1139	1151	150A	B	1N2W	121624	E168.4
150	1152	1238	151A	A			
151	1326	1335	151A	A		140341	E141.6
151	1337	1425	152A	B			
152	1521	1612	153A	A		155057	E114.8
153	1706	1800	154A	B	2W	173314	E088.0
154	1850	1947	155A	A		192531	E061.1
155	2036	2134	156A	B		211247	E034.3
156	2224	2322	160R	A		230004	E007.5
157	0010	0022	160R	A		004720	W019.3

ESMR

DATA ORBIT	ON HRMN	OFF HRMN	INT ORBIT + STDN	H D R S
145	0058	0248	146R	B
146	0257	0453	146R	A
147	0459	0643	147R	A
148	0642	0805	148A	B
149	0823	1006	149A	A
150	1010	1153	150A	B
151	1155	1336	151A	A
152	1340	1520	152A	B
153	1524	1705	153A	A
154	1708	1851	154A	B
155	1853	2036	155A	A
156	2038	2223	156A	B
157	2224	0000	160R	A

NEMS - SCR - ITPR

0058	0248	146R	B**
0256	0453	146R	A**
0459	0643	148A	B
0641	0821	147R	A
0821	1007	149A	A
1004	1153	150A	B
1152	1337	151A	A
1337	1521	152A	B
1521	1706	153A	A
1706	1850	154A	B
1850	2037	155A	A
2037	2223	156A	B
2224	0023	160R	A

**ITPR DATA IS NOT AVAILABLE FOR THESE ORBITS.

TABLE 2-2
DATA AVAILABILITY ON-OFF TIMES
23 DECEMBER 1972

THIR

DATA ORBIT	11.5 + 6.7 ON HRMN	OFF HRMN	INT ORBIT + STDN	HDRS	THIR GRID CORR LALO	ASC. AND DESC. NODE TIME HRMNSS	LONG DEG
	DAYTIME THIR					ASC. NODE	
158						014101	E147.3
159	0256	0345	159R	B		032818	E120.5
160	0443	0532	160R	B		051534	E093.5
161	0631	0719	161A	B	3S2E	070251	E066.8
162	0818	0906	162A	A	1N	085008	E040.0
163	1005	1054	163A	B		103724	E013.[illegible]
164	1153	1241	164A	A		122441	W013.5
165	1340	1428	165A	B		141157	W040.5
166	1527	1616	166A	A		155914	W067.3
167	1714	1803	167A	B		174630	W094.1
168	1902	1948	168A	A		193347	W120.9
169	2049	2134	169A	B		212104	W147.7
170						230820	W174.6
	NIGHTTIME THIR					DESC. NODE	
158	0212	0256	159R	B		023437	W046.1
159	0345	0409	159R	B		042153	W073.0
159	0416	0443	160R	B			
160	0532	0554	160R	B		060910	W099.8
160	0607	0631	161A	B	3N2W		
161	0719	0726	161A	B	3N2W	075627	W126.6
161	0734	0818	162A	A	1S		
162	0906	0920	162A	A	1S	094343	W153.4
162	0919	1005	163A	B			
163	1054	1107	163A	B		113060	E179.8
163	1105	1153	164A	A			
164	1241	1253	164A	A		131816	E153.0
164	1250	1340	165A	B			
165	1428	1434	165A	B		150533	E126.2
165	1437	1527	156A	A			
166	1619	1714	167A	B		165249	E099.[illegible]
167	1807	1902	168A	A		184006	E072.5
168	1950	2049	169A	B		202723	E045.7
169						221439	E018.9
170						000156	W007.9

ESMR

DATA ORBIT	ON HRMN	OFF HRMN	INT ORBIT + STDN	HDRS
159	0212	0327	159R	B
160	0416	0556	160R	B
161	0608	0737	161A	B
162	0737	0922	162A	A
163	0924	1109	163A	B
164	1111	1255	164A	A
165	1256	1437	165A	B
166	1440	1621	166A	A
167	1624	1808	167A	B
168	1808	1950	168A	A
169	1954	2139	169A	B

NEMS - SCR - ITPR

ON HRMN	OFF HRMN	INT ORBIT + STDN	HDRS
0212	0410	159R	B
0416	0555	160R	B
0608	0738	161A	B
0735	0922	162A	A
0919	1109	163A	B
1105	1254	164A	A
1251	1437	165A	B
1437	1621	166A	A
1621	1807	167A	B
1807	1950	168A	A
1950	2136	169A	B

TABLE 2-2
DATA AVAILABILITY ON-OFF TIMES
24 DECEMBER 1972

THIR

DATA ORBIT	11.5 + 6.7 ON HRMN	OFF HRMN	INT ORBIT + STDN	H D R S	THIR GRID CORR LALO	ASC. AND DESC. NODE TIME HRMNSS	LONG DEG
	DAYTIME THIR					ASC. NODE	
171						005537	E158.5
172	0211	0259	173R	B		024253	E131.8
173	0358	0447	173R	A	2S	043010	E105.0
174	0545	0634	174R	A		061727	E076.2
175	0733	0821	175A	B		080443	E051.1
176	0920	1008	176A	A	1S	095200	E024.6
177	1107	1156	177A	B	1N	113916	W002.3
178	1254	1343	178A	A		132633	W029.1
179	1442	1530	179A	B	1N	151349	W055.9
180	1629	1717	180A	A		170106	W082.7
181	1816	1901	181A	B		184823	W109.6
182	2004	2029	182A	A		203539	W136.4
182	2029	2051	182A	A	3N		
183	2151	2239	183A	B		222256	W163.2
	NIGHTTIME THIR					DESC. NODE	
171	0116	0211	173R	B		014912	W034.8
172	0259	0315	173R	B		033629	W061.6
172	0315	0358	173R	A	2N		
173	0447	0508	173R	A	2N	052345	W088.4
173	0515	0545	174R	A			
174	0634	0655	174R	A		071102	W115.2
174	0655	0733	175A	B			
175	0821	0835	175A	B		085819	W142.0
175	0837	0920	176A	A	1N		
176	1008	1023	176A	A	1N	104535	W168.9
176	1020	1107	177A	B	1S		
177	1156	1209	177A	B	1S	123252	E164.3
177	1205	1254	178A	A			
178	1343	1352	178A	A	1S	142008	E137.5
178	1353	1442	179A	B			
179	1530	1537	179A	B	1S	160725	E110.7
179	1536	1629	180A	A			
180	1720	1816	181A	B		175441	E083.6
181	1905	2004	182A	A		194158	E057.0
182	2052	2151	183A	B		212915	E030.2
183	2239	2338	187R	A		231631	E003.4

ESMR

DATA ORBIT	ON HRMN	OFF HRMN	INT ORBIT + STDN	H D R S
172	0116	0316	173R	B
173	0316	0509	173R	A
174	0515	0657	174R	A
175	0658	0837	175A	B
176	0839	1025	176A	A
177	1026	1218	177A	B
178	1211	1354	178A	A
179	1356	1538	179A	B
180	1540	1719	180A	A
181	1724	1905	181A	B
182	1909	2052	182A	A
183	2055	2240	183A	B
184	2239	0000	186R	A

NEMS - SCR - ITPR

ON HRMN	OFF HRMN	INT ORBIT + STDN	H D R S
0116	0315	173R	B
0315	0510	173R	A
0515	0656	174R	A
0655	0837	175A	B
0834	1024	176A	A
1020	1210	177A	B
1206	1354	178A	A
1353	1538	179A	B
1536	1719	180A	A
1720	1905	181A	B
1902	2052	182A	A
2051	2248	183A	B
2238	0038	187R	A

TABLE 2-2
DATA AVAILABILITY ON-OFF TIMES
25 DECEMBER 1972

THIR

DATA ORBIT	11.5 + 6.7 ON HRMN	OFF HRMN	INT ORBIT + STDN	HDRS	THIR GRID CORR LALO	ASC. AND DESC. NODE TIME HRMNSS	LONG DEG
DAYTIME THIR						**ASC. NODE**	
184	2338	0027	187R	A		001012	E170.0
185						015729	E143.2
186	0313	04[illegible]	186R	B		034446	E116.3
187	0500	0546	187R	B		053202	E089.5
188	0647	0736	188A	B		071919	E062.7
189	0834	0923	189A	B		090635	E035 9
190	1022	1110	190A	A		105352	E009.1
191	1209	1258	191A	B		124108	W017.8
192	1356	1445	192A	A		142825	W044.7
193	1544	1632	193A	B		161542	W071.4
194	1731	1819	194A	A		180258	W098.2
195	1918	2006	195A	B		195015	W125.0
196	2105	2152	196A	A		213731	W151.9
197						232448	W178.7
NIGHTTIME THIR						**DESC. NODE**	
184	0027	0037	187R	A		010348	W023.4
185	0228	0313	186R	B		025104	W050.3
186	0401	0425	186R	B		043821	W077.1
186	0432	0500	187R	B			
187	0548	0610	187R	B		062538	W103.9
187	0620	0647	188A	B			
188	0736	0752	188A	B		081254	W130.7
188	0751	0834	189A	B			
189	0923	0936	189A	B		100011	W157.5
189	0935	1022	190A	A			
190	1110	1124	190A	A		114727	E175.7
190	1122	1209	191A	B			
191	1258	1309	191A	B		133444	E148.9
191	1307	1356	192A	A			
192	1445	1452	192A	A		152200	E122.0
192	1452	1544	193A	B			
193						170917	E095.2
194	1819	1918	195A	B		185633	E068.4
195	2008	2105	196A	B		204350	E041.6
196						223107	E014.8
197						001823	W012.1

ESMR

DATA ORBIT	ON HRMN	OFF HRMN	INT ORBIT + STDN	HDRS
186	0228	0427	186R	B
187	0432	0610	187R	B
188	0620	0752	188A	A
189	0753	0938	189A	B
190	0941	1125	190A	A
191	1127	1310	191A	B
192	1312	1453	192A	A
193	1456	1637	193A	B
194	1640	1821	194A	A
195	1824	2008	195A	B
196	2010	2153	196A	A

NEMS - SCR - ITPR

ON HRMN	OFF HRMN	INT ORBIT + STDN	HDRS
0228	0426	186R	B
0620	0753	188A	A
0752	0938	189A	B
0936	1125	190A	A
1122	1310	191A	B
1307	1453	192A	A
1452	1637	193A	B
1634	1821	194A	A
1819	2007	195A	B
2008	2153	196A	A

TABLE 2-2
DATA AVAILABILITY ON-OFF TIMES
26 DECEMBER 1972

THIR							
DATA ORBIT	11.5 + 6.7 ON HRMN	OFF HRMN	INT ORBIT + STDN	H D R S	THIR GRID CORR LALO	ASC. AND DESC. NODE TIME HRMNSS	LONG DEG
	DAYTIME THIR					ASC. NODE	
198						011205	E154.5
199	0227	0316	200R	B		025921	E127.7
200	0414	0503	200R	A	1S	044638	E100.9
201	0602	0650	201R	A		063354	E074.1
202	0749	0838	202A	B		082111	E047.3
203	0936	1025	203A	A	2E	100827	E020.4
204	1124	1212	204A	B		115544	W006.4
205	1311	1347	205A	A		134301	W033.2
205	1358	1359	205A	A			
206	1458	1547	206A	B	2S	153017	W060.0
207	1645	1734	207A	A		171734	W086.9
208	1833	1920	208A	B		190450	W113.7
209	2020	2106	209A	A		205207	W140.5
210	2207	2253	210A	B		223924	W167.3
	NIGHTTIME THIR					DESC. NODE	
198	0148	0227	200R	B		020640	W038.8
199	0316	0330	200R	B		035256	W065.7
199	0329	0414	200R	A	1N		
200	0503	0526	200R	A	1N	054013	W092.5
200	0532	0602	201R	A			
201	0650	0712	201R	A		072730	W119.3
201	0713	0749	202A	B			
202	0838	0851	202A	B		091446	W146.2
202	0851	0936	203A	A	2W		
203	1025	1041	203A	A	2W	110203	W173.0
203	1037	1124	204A	B			
204	1212	1226	204A	B		124919	E160.2
204	1223	1311	205A	B			
205	1359	1408	205A	A		143636	E133.4
205	1409	1458	206A	B	2N		
206	1551	1645	207A	A		162352	E106.6
207	1734	1833	208A	B		181109	E079.7
208	1921	2024	209A	A		195826	E052.9
209	2108	2207	210A	B		214542	E026.1
210	2256	2354	213R	A		233259	W000.7

ESMR				
DATA ORBIT	ON HRMN	OFF HRMN	INT ORBIT + STDN	H D R S
199	0148	0331	200R	B
200	0330	0526	200R	A
201	0532	0713	201R	A
202	0714	0851	202A	B
203	0856	1041	203A	A
204	1042	1227	204A	B
205	1235	1409	205A	A
206	1412	1554	206A	B
207	1556	1737	207A	A
208	1740	1921	208A	B
209	1925	2107	209A	A
210	2111	2254	210A	B

NEMS - SCR - ITPR			
0148	0330	200R	B
0330	0526	200R	A
0532	0713	201R	A ••
0713	0851	202A	B ••
0851	1041	203A	A ••
1037	1227	204A	B ••
1224	1409	205A	A ••
1409	1554	206A	B ••
1551	1737	207A	A ••
1734	1921	208A	B ••
1920	2107	209A	A
2106	2254	210A	B
2254	0056	213R	A

••ITPR DATA IS NOT AVAILABLE FOR THESE ORBITS.

TABLE 2-2
DATA AVAILABILITY ON-OFF TIMES
27 DECEMBER 1972

THIR

DATA ORBIT	11.5 + 6.7 ON HRMN	OFF HRMN	INT ORBIT + STDN	HDRS	THIR GRID CORR LALO	ASC. AND DESC. NODE TIME HRMNSS	LONG DEG
	DAYTIME THIR					**ASC. NODE**	
211	2354	0843	213R	A		002640	E165.9
212						021357	E139.0
213	0329	0418	213R	B		040113	E112.2
214	0516	0605	214R	B		054830	E085.4
215	0704	0752	215A	A		073546	E058.6
216	0851	0939	216A	B		092303	E031.8
217	1038	1127	217A	A	1S2E	111020	E004.9
218	1225	1314	218A	B	1S	125736	W021.9
219	1413	1501	219A	A	1N	144453	W048.7
220	1600	1648	220A	B		163209	W075.5
221	1747	1837	221A	B		181926	W102.3
222	1934	2022	222A	B		200643	W129.2
223	2122	2210	223A	B		215359	W156.0
224						234116	E177.2
	NIGHTTIME THIR					**DESC. NODE**	
211	0043	0055	213R	A		012015	W027.6
212	0244	0329	213R	B		030732	W054.4
213	0418	0438	213R	B		045448	W081.2
213	0444	0516	214R	B	1W		
214	0605	0629	214R	B	1W	064205	W108.0
214	0630	0704	215A	A			
215	0752	0807	215A	A		082922	W134.8
215	0806	0851	216A	B			
216	0939	0953	216A	B		101638	W161.6
216	0954	1038	217A	A	1N2W		
217	1127	1140	217A	A	1N2W	120355	E171.6
217	11[illegible]8	1225	218A	B	1N		
218	1314	1324	218A	B	1N	135111	E144.8
218	1329	1413*	219A	A	1S		
219	1501	1507	219A	A	1S	153828	E117.9
219	1509	1600	220A	B			
220	1648	1653*	220A	B		172544	E091.1
220	1653	1747	221A	A			
221	1836	1934	222A	B		191301	E064.3
222	2023	2122	223A	A		210018	E037.5
223						224734	E010.6
224	0001	0056	227R	B	1W	003451	W016.2

*6.7 CHANNEL ON-OFF DIFFERENCE

218	1335	1413	219A	A
220	1648	1653	NO DATA	

ESMR

DATA ORBIT	ON HRMN	OFF HRMN	INT ORBIT + STDN	HDRS
211	2257	0057	213R	A
213	0245	0439	213R	B
214	0445	0630	214R	B
215	0630	0808	215A	A
216	0810	0955	216A	B
217	0957	1141	217A	A
218	1143	1327	218A	B
219	1328	1509	219A	A
220	1512	1655	220A	B
221	1656	1838	221A	A
222	1840	2023	222A	B
223	2029	2211	223A	A

NEMS - SCR - ITPR

ON HRMN	OFF HRMN	INT ORBIT + STDN	HDRS
0245	0439	213R	B
0444	0630	214R	B
0629	0808	215A	A
0807	0955	216A	B
0954	1141	217A	A
1138	1327	213A	B
1325	1509	219A	A
1509	1654	220A	B
1654	1838	221A	A
1836	2023	222A	B
2022	2211	223A	A
0001	0200	227R	B

TABLE 2-2
DATA AVAILABILITY ON-OFF TIMES
28 DECEMBER 197[illegible]

THIR

DATA ORBIT	11.5 + 6.7 ON HRMN	OFF HRMN	INT ORBIT + STDN	H D R S	THIR GRID CORR LALO	ASC. AND DESC. NODE TIME HRMNSS	LONG DEG
	DAYTIME THIR					ASC. NODE	
225	0056	0145	227R	B	1E	012832	E150.4
226	0244	0332	226R	A		031549	E123.6
227	0431	0519	227R	A		050305	E096.8
228	0618	0707	228A	A		065022	E070.0
229	0805	0854	229A	B		083739	E043.1
230	0953	1041	230A	A	3E	102455	E016.3
231	1140	1229	231A	B	1S	121212	W010.5
232	1327	1416	232A	A		135928	W037.3
233	1515	1603	233A	B		154645	W064.1
234	1702	1750	234A	A	1N	173401	W091.0
235	1849	1937	235A	B		192118	W117.8
236	2036	2123	236A	A		210835	W144.6
237	2224	2311	237A	B		225551	W171.4
	NIGHTTIME THIR					DESC. NODE	
225	0145	0200	227R	B	1W	022207	W04[illegible]
225	0159	0244	226R	A			
226	0332	0357	226R	A		040924	W06[illegible].5
226	0404	0431	227R	A			
227	0519	0541	227R	A		055641	W09[illegible].6
227	0547	0618	228A	A			
228	0707	0722	228A	A		074357	W123.5
228	0723	0805	229A	B			
229	0854	0908	229A	B		093114	W150.3
229	0909	0953	230A	A	3W		
230	1041	1048	230A	A	3W	111830	W177.1
230	1054	1140	231A	B	1N		
231	1229	1240	231A	B	1N	130547	E156.1
231	1242	1327	232A	B			
232	1416	1425	232A	B		145303	E129.3
232	1425	1515	233A	B			
233	1603	1609	233A	B		164020	E102.4
233	1610	1702	234A	A			
234	1751	1849	235A	B	1S	182736	E075.6
235	1938	2036	236A	A		201453	E048.8
236	2125	2224	237A	B		220210	E022.0
237	2322	0011	240R	A	2N1W	234926	W004.8

ESMR

DATA ORBIT	ON HRMN	OFF HRMN	INT ORBIT + STDN	H D R S
225	0001	0201	227R	B
226	0159	0358	226R	A
227	0404	0537	227R	A
228	0547	0723	228A	A
229	0724	0909	229A	B
230	0912	1054	230A	A
231	1058	1141	231A	B
232	1243	1426	232A	A
233	1428	1605	233A	B
234	1612	1753	234A	A
235	1756	1938	235A	B
236	1941	2124	236A	A
237	2127	2312	237A	B
237	2323	2359	240R	A

NEMS - SCR - ITPR

ON HRMN	OFF HRMN	INT ORBIT + STDN	H D R S
0001	0200	227R	B
0159	0358	226R	A
0404	0541	227R	A
0547	0723	228A	A
0723	0909	229A	B
0909	1054	230A	A
1054	1242	231A	B
1242	1426	232A	A
1425	1605	233A	B
1610	1752	234A	B
1751	1938	235A	B
1936	2124	236A	A
2123	2312	237A	B
2323	0114	240R	B

TABLE 2-2
DATA AVAILABILITY ON-OFF TIMES
29 DECEMBER 1972

THIR

DATA ORBIT	11.5 + 6.7 ON HRMN	OFF HRMN	INT ORBIT + STDN	H D R S	THIR GRID CORR LALO	ASC. AND DESC. NODE TIME HRMNSS	LONG DEG
	DAYTIME THIR					ASC. NODE	
238	0011	0059	240R	A	2S1E	004300	E161.7
239						023024	E134.9
240	0345	0434	240R	B		041741	E108.1
241	0533	0621	241R	B	2S	060458	E081.3
242	0720	0809	242A	A	1S	075214	E054.5
243	0907	0955	243A	B		093931	E027.6
244	1053	1143	244A	A		112647	E000.8
245	1242	1330	245A	B		131404	W026.0
246	1429	1518	246A	A		150120	W052.8
247	1616	1705	247A	B		164837	W079.6
248	1804	1852	248A	B		183554	W106.5
249	1951	2039	249A	B	1N	202310	W133.3
250	2138	2227	250A	A		221027	W16[illegible].1
251						235743	E173.[illegible]
	NIGHTTIME THIR					DESC. NODE	
238	0059	0110	240R	A	2S1W	013643	W031.7
239	0301	0345	240R	B		032359	W058.5
240	0434	0456	240R	B		051116	W085.3
240	0502	0533	241R	B	2S		
241	0621	0643	241R	B	2S	065832	W112.1
241	0645	0720	242A	B	1S		
42	0809	0822	242A	A	1S	084549	W138.9
242	0824	0907	243A	B			
243	0956	1011	243A	B		103306	W165.7
243	1011	1053	244A	A			
244	1143	1154	244A	A		122022	E167.5
244	1155	1242	245A	B			
245	1332	1342	245A	B		140739	E140.6
245	1343	1429	246A	A			
246	1518	1526	246A	A		155455	E113.8
246	1528	1616	247A	B			
247	1709	1804	248A	A		174212	E087.0
248	1852	1951	249A	B	1N	192928	E060.2
249	2040	2138	250A	A		211645	E033.4
250						230402	E006.5
251	0018	0113	251R	B	1S	005118	W020.3

ESMR

DATA ORBIT	ON HRMN	OFF HRMN	INT ORBIT + STDN	H D R S
241	0503	0645	241R	B
242	0646	0824	242A	A
243	0827	1012	243A	B
244	1013	1155	244A	A
245	1159	1345	245A	B
246	1344	1527	246A	A
247	1528	1709	247A	B
248	1712	1854	248A	A
249	1857	2040	249A	B
250	2042	2228	250A	A

NEMS - SCR - ITPR

ON HRMN	OFF HRMN	INT ORBIT + STDN	H D R S
0328	0457	240R	A
0503	0645	241R	B
0645	0824	242A	A
0824	1012	243A	B
1012	1155	244A	A
1155	1344	245A	B
1343	1527	246A	A
1528	1709	247A	B
1709	1854	248A	A
1852	2040	249A	B
2040	2228	250A	A

TABLE 2-2
DATA AVAILABILITY ON-OFF TIMES
30 DECEMBER 1972

THIR

DATA ORBIT	11.5 + 6.7 ON HRMN	OFF HRMN	INT ORBIT + STDN	H D R S	THIR GRID CORR LALO	ASC. AND DESC. NODE TIME HRMNSS	LONG DEG
	DAYTIME THIR					ASC. NODE	
252	0113	0201	254R	B	1S	014460	E146.3
253	0300	0349	253R	A		033217	E119.5
254	0447	0536	254R	A		051933	E092.7
255	0635	0723	255A	A		070650	E065.8
256	0822	0910	256A	B		085406	E039.0
257	1009	1058	257A	A		104123	E012.2
258	1156	1245	258A	B	2S	122839	W014.6
259	1344	1432	259A	A	1S1E	141556	W041.4
260	1531	1620	260A	B		160313	W068.3
261	1718	1806	261A	A	2S	175029	W095.1
262	1905	1953	262A	B		193746	W121.9
263	2053	2140	263A	A		212502	W148.7
264	2240	2329	267R	B		231219	W175.6

DATA ORBIT	11.5 + 6.7 ON HRMN	OFF HRMN	INT ORBIT + STDN	H D R S	THIR GRID CORR LALO	ASC. AND DESC. NODE TIME HRMNSS	LONG DEG
	NIGHTTIME THIR					DESC. NODE	
252	0201	0216	254R	B	1S	023835	W047.1
252	0216	0300	253R	A			
253	0349	0413	253R	A		042551	W073.9
253	0419	0447	254R	A			
254	0536	0557	254R	A		061308	W100.8
254	0603	0635	255A	A			
255	0723	0735	255A	A		080024	W127.6
255	0739	0822	256A	B			
256	0910	0924	256A	B		094741	W154 4
256	0925	1027	257A	B			
257	1058	1109	257A	A		113458	E178.8
257	1110	1156	258A	B	2N		
258	1245	1252	258A	B	2N	132214	E152.0
258	1256	1344	259A	A	1N1W		
259	1437	1439	259A	A	1N1W	150931	E125.1
259	1441	1531	260A	B			
260	1624	1718	261A	A	2N	165647	E098.3
261	1809	1905	262A	B		184404	E071.5
262	1954	2053	263A	A		203120	E044.7
263	2141	2240	267R	B		221637	E017.9
264	2329	2339	267R	B		000564	W009.0

ESMR

DATA ORBIT	ON HRMN	OFF HRMN	INT ORBIT + STDN	H D R S
252	0018	0215	254R	B
253	0217	0414	253R	A
254	0419	0558	254R	A
255	0604	0739	255A	A
256	0741	0925	256A	B
257	0928	1110	257A	A
258	1114	1257	258A	B
259	1259	1442	259A	A
260	1444	1626	260A	B
261	1628	1810	261A	A
262	1812	1954	262A	B
263	1957	2142	263A	A
264	2141	2341	267R	B

NEMS - SCR - ITPR

ON HRMN	OFF HRMN	INT ORBIT + STDN	H D R S
0018	0214	254R	B
0217	0414	253R	A
0419	0558	254R	A
0604	0739	255A	A
0739	0925	256A	B
0925	1111	257A	A
1111	1256	258A	B
1257	1441	259A	A
1441	1626	260A	B
1625	1809	261A	A
1809	1954	262A	B
1954	2142	263A	A
2139	2340	267R	B

TABLE 2-2
DATA AVAILABILITY ON-OFF TIMES
31 DECEMBER 1972

THIR

DATA ORBIT	11.5 + 6.7 ON HRMN	OFF HRMN	INT ORBIT + STDN	N D R S	THIR GRID CORR LALO	ASC. AND DESC. NODE TIME HRMNSS	LONG DEC
	DAYTIME THIR					ASC. NODE	
265						005936	E157.6
266						024652	E130.8
267	0402	0450	267R	A		043409	E104.0
268	0549	0638	268R	A		062125	E077.2
269	0736	0825	269A	B		080642	E050.3
270	0924	1012	270A	A		095558	E023.5
271	1111	1200	271A	B	1S	114315	W003.3
272	1258	1347	272A	A	1N	133032	W030.1
273	1446	1534	273A	B	1E	151748	W056.9
274	1633	1721	274A	A		170505	W083.7
275	1820	1907	275A	B		185221	W110.6
276	2007	2054	276A	A		203938	W137.4
277	2155	2243	277A	B		222655	W164.2
	NIGHTTIME THIR					DESC. NODE	
265						015310	W035.8
266	0317	0402	267R	A		034027	W062.6
267	0450	0509	267R	A		052743	W089.4
267	0517	0549	268R	A			
268	0638	0659	268R	A		071460	W116.2
258	0700	0736	269A	B			
269	0825	0640	269A	B		090216	W143.0
269	0843	0924	270A	A			
270	1012	1025	270A	A		104933	W169.8
270	1027	1111	271A	B	1N		
271	1200	1209	271A	B	1N	123650	E163.3
271	1213	1258	272A	A	1S		
272	1347	1356	272A	A	1S	142406	E136.5
272	1358	1446	273A	B	1W		
273	1534	1540	273A	B	1W	161123	E109.7
273	1541	1633	274A	A			
274	1725	1820	275A	B		175839	E082.9
275	1908	2007	276A	A		194556	E056.1
276	2056	2155	277A	B		213312	E029.2
277						232029	E002.4

ESMR

DATA ORBIT	ON HRMN	OFF HRMN	INT ORBIT + STDN	N D R S
267	0318	0512	267R	A
268	0518	0700	268R	A
269	0701	0843	269A	B
270	0843	1027	270A	A
271	1027	1213	271A	B
272	1213	1358	272A	A
273	1358	1514	273A	B
274	1541	1726	274A	A
275	1725	1909	275A	B
276	1909	2055	276A	A
277	2056	2245	277A	B

NEMS - SCR - ITPR

ON HRMN	OFF HRMN	INT ORBIT + STDN	N D R S
0318	0512	267R	A
0516	0706	268R	A
0701	0843	269A	B
0843	1027	270A	A
1027	1213	271A	B
1213	1358	272A	A
1358	1514	273A	B
1541	1726	274A	A
1725	1909	275A	B
1939	2055	276A	A
2056	2245	277A	B

TABLE 2-2
DATA AVAILABILITY ON-OFF TIMES
1 JANUARY 1973

THIR

DATA ORBIT	11.5 + 6.7 ON HRMN	11.5 + 6.7 OFF HRMN	INT ORBIT + STDN	HDRS	THIR GRID CORR LALO	ASC. AND DESC. NODE TIME HRMNSS	NODE LONG DEG
DAYTIME THIR						ASC. NODE	
278						001410	E169.0
279	0129	0218	280R	A		020127	E142.2
280	0316	0405	280R	B		034843	E115.4
281	0504	0552	281R	B	1W	053560	E088.6
282	0651	0740	282A	A		072316	E061.7
283	0838	0927	283A	B	1W	091033	E034.9
284	1026	1114	284A	A		105750	E008.1
285	1213	1301	285A	B		124506	W018.7
286	1400	1449	286A	A		143223	W045.6
287	1547	1636	287A	B		161939	W072.4
288	1735	1823	288A	A		180656	W099.2
289	1922	2009	289A	B		195413	W126.0
290	2109	2157	290A	A		214129	W152.8
291	2256	2345	294R	B		232846	W179.7
NIGHTTIME THIR						DESC. NODE	
278	0047	0129	280R	A		010745	W024.4
279	0218	0232	280R	A		025501	W051.2
279	0232	0316	280R	B			
280	0405	0429	280R	B		044218	W078.0
280	0435	0504	281R	B	1E		
281	0552	0615	281R	B	1E	062934	W104.9
281	0617	0651	282A	B			
282	0740	0754	282A	A		081651	W131.7
282	0755	0838	283A	B	1E		
283	0927	0939	283A	B	1E	100407	W158.5
283	0941	1026	284A	A			
284	1114	1127	284A	A		115124	E174.7
284	1134	1213	285A	B			
285	1301	1311	285A	B		133841	E147.9
285	1314	1400	286A	B			
286	1449	1455	286A	A		152557	E121.0
286	1455	1547	287A	B			
287	1640	1735	288A	A		171314	E094.2
288	1824	1922	289A	B		190030	E067.4
289	2014	2109	290A	A		204747	E040.6
290	2158	2256	294R	B		223503	E013.8
291	2345	2356	294R	B		002220	W013.1

ESMR

DATA ORBIT	ON HRMN	OFF HRMN	INT ORBIT + STDN	HDRS
280	0232	0430	280R	B
281	0435	0617	281R	B
282	0618	0755	282A	A
283	0757	0941	283A	B
284	0945	1129	284A	A
285	1135	1313	285A	B
286	1315	1457	286A	A
287	1500	1641	287A	B
288	1644	1825	288A	A
289	1828	2010	289A	B
290	2014	2158	290A	A
291	2159	2355	294R	B

NEMS - SCR - ITPR

ON HRMN	OFF HRMN	INT ORBIT + STDN	HDRS
0126	0233	280R	A
0232	0430	280R	B
0435	0616	281R	B
0617	0755	282A	A
0755	0941	283A	B
0941	1129	284A	A
1134	1313	285A	B
1313	1457	286A	A
1456	1641	287A	B
1640	1825	288A	A
1824	2010	289A	B
2014	2158	290A	A

TABLE 2-2
DATA AVAILABILITY ON-OFF TIMES
2 JANUARY 1973

THIR

DATA ORBIT	11.5 + 6.7 ON HRMN	OFF HRMN	INT ORBIT + STDN	H D R S	THIR GRID CORR LALO	ASC. AND DESC. NODE TIME HRMMSS	LONG DEG
	DAYTIME THIR					**ASC. NODE**	
292						01160.	E153.5
293	0231	0320	293R	A		030319	126.7
294	0418	0507	294R	A		045936	E099.9
295	0606	0654	295R	A		063752	E073.1
296	0753	0841	296A	B	2E	082509	E046.2
297	0940	1029	297A	A		101225	E019.4
298	1127	1216	298A	B	1S1W	115942	W007.4
299	1315	1403	299A	A		134658	W034.2
300	1502	1551	300A	B		153415	W061.0
301	1649	1738	301A	A		172131	W087.8
302	1836	1923	302A	B	1W	190848	W114.6
303	2024	2112	303A	A		205605	W141.5
304	2211	2300	304A	B		224321	W168.3
	NIGHTTIME THIR					**DESC. NODE**	
292	0147	0231	293R	A		020937	W039.9
293	0320	0346	293R	A		035653	W066.7
293	0354	0418	294R	A			
294	0507	0528	294R	A		054410	W093.5
294	0534	0606	295R	A			
295	0654	0716	295R	A		073126	W120.3
295	0718	0753	296A	B	2E		
296	0841	0854	296A	B	2E	091843	W147.2
296	9855	0940	297A	A			
297	1029	1035	297A	A		110559	W174.0
297	1043	1127	298A	B	1N1W		
298	1216	1227	298A	B	1N1W	125316	E159.2
298	1228	1315	299A	A			
299	1403	1411	299A	A		144033	E132.4
299	1412	1502	300A	B			
300	1554	1649	301A	A		162749	E105.6
301	1741	1836	302A	B	1W	181506	E078.8
302	1925	2024	303A	A		200222	E052.0
303	2112	2211	304A	B		214939	E025.1
304						233655	W001.7

ESMR

DATA ORBIT	ON HRMN	OFF HRMN	INT ORBIT + STDN	H D R S
294	0354	0530	294R	A
295	0534	0718	295R	A
296	0718	0855	296A	B
297	0859	1044	297A	A
298	1046	1228	298A	B
299	1231	1409	299A	A
300	1415	1557	300A	B
301	1559	1741	301A	A
302	1744	1924	302A	B
303	1929	2112	303A	A
304	2115	23[illegible]	304A	B

NEMS - SCR - ITPR

ON HRMN	OFF HRMN	INT ORBIT + STDN	H D R S
0211	0347	293R	A
0354	0529	294R	A
0534	0718	295R	A
0718	0855	296A	B
0856	1044	297A	A
1034	1228	298A	B
1229	1409	299A	A
1412	1557	300A	B
1555	1741	301A	A
1741	1925	302A	B
1925	2113	303A	A
2112	2301	304A	B

TABLE 2-2
DATA AVAILABILITY ON-OFF TIMES
3 JANUARY 1973

THIR

DATA ORBIT	11.5 + 6.7 ON HRMN	OFF HRMN	INT ORBIT + STDN	H D R S	THIR GRID CORR LALO	ASC. AND DESC. NODE TIME HRMNSS	NODE LONG DEG
	DAYTIME THIR					**ASC. NODE**	
305						003038	E164.9
306	0146	0234	307R	A		021754	E138.1
307	0333	0421	307R	B		040511	E111.3
308	0520	0609	308R	B		055228	E084.4
309	0707	0756	309A	A		073944	E057.6
310	0855	0943	310A	B		092701	E030.8
311	104	1131	311A	A		111417	E004.0
312	1229	1318	312A	B	2E	130134	W022.9
313	1417	1505	313A	A		144850	W049.7
314	1604	1652	314A	B		163607	W076.5
315	1751	1840	315A	A		182324	W103.3
316	1938	2027	316A	B		201040	W130.1
317	2126	2214	317A	A		215757	W157.0
318	2313	0001	321R	[illegible]	1W	234513	E176.2
	NIGHTTIME THIR					**DESC. NODE**	
305	0114	0146	307R	A		012412	W028.5
306	0234	0256	307R	A		031129	W055.3
306	0244	0333	307R	[illegible]			
307	0421	0444	307R	B		045845	W082.2
307	0451	0520	308R	B			
308	0609	0631	308R	B		064602	W109.0
308	0632	0707	309A	A			
309	0756	0810	309A	A		083318	W135.8
309	0811	0855	310A	B			
310	0943	0955	310A	B		102035	W162.6
310	0957	1042	311A	A			
311	1131	1143	311A	A		120751	E170.6
311	1144	1229	312A	B	2E		
312	1318	1327	312A	B	2E	135508	E143.7
312	1327	1417	313A	A			
313	1505	1513*	313A	A		154225	E116.9
313	1514	1604	314A	B			
314	1652	1658*	314A	B		172941	E090.1
314	1658	1751	315A	A			
315	1840	1938	316A	B		191657	E063.3
316	2027	2126	317A	A		210414	E036.5
317	2215	2313	321R	B	1W	225131	E009.7
318	0601	0013	321R	B	1W	003847	W017.2

*6.7 CHANNEL ON-OFF DIFFERENCE

313	1505	1513	NO DATA
314	1652	1658	NO DATA

ESNR

DATA ORBIT	ON HRMN	OFF HRMN	INT ORBIT + STDN	H D R S
306	0104	0240	307R	A
307	0246	0445	307R	B
308	0451	0632	308R	B
309	0634	0812	309A	A
310	0814	0957	310A	B
311	1001	1144	311A	A
312	1147	1328	312A	B
313	1331	1514	313A	A
314	1515	1659	314A	B
315	1659	1844	315A	A
316	1844	2030	316A	B
317	2030	2216	317A	A
318	2221	0000	321R	B

NEWS - SCR - ITPR

ON	OFF	STDN	HDRS
0114	0257	307R	A
0244	0444	307R	B
0451	0632	308R	B
0633	0811	309A	A
0811	0957	310A	B**
0957	1145	311A	A**
1144	1328	312A	B**
1327	1514	313A	A**
1514	1659	314A	B**
1658	1844	315A	A
1839	2030	316A	B
2027	2217	317A	A
2221	0014	321R	B

**ITPR DATA IS NOT AVAILABLE FOR THESE ORBITS.

TABLE 2-2
DATA AVAILABILITY ON-OFF TIMES
4 JANUARY 1973

THIR

DATA ORBIT	11.5 + 6.7 ON HRMN	OFF HRMN	INT ORBIT + STDN	HDRS	THIR GRID CORR LALO	ASC. AND DESC. NODE TIME HRMNSS	LONG DEG
	DAYTIME THIR					ASC. NODE	
319						013230	E149 4
320	0247	0336	320R	A		031947	E122.6
321	0435	0523	321R	A		050703	E095.8
322	0622	0711	322A	A		065420	E069.0
323	0809	0858	323A	B		084136	E042.1
324	0957	1045	324A	A	1E	102053	E015.3
325	1144	1232	325A	B	2N	121609	W011.5
326	1331	1420	326A	A		140326	W038.3
327	1518	1607	327A	B		155043	W065.1
328	1706	1755	328A	A		173759	W091.9
329	1853	1940	329A	B		192516	W118.8
330	2040	2127	330A	A		211232	W145.6
331	2227	2314	331A	B		225949	W172.4
	NIGHTTIME THIR					DESC. NODE	
319	0203	0247	320R	A		022604	W044.0
320	0336	0360	320R	A		041321	W070.8
320	0406	0435	321R	A			
321	0523	0543	321R	A		060037	W097.6
321	0550	0622	322A	A			
322	0711	0726	322A	A		074754	W124.4
322	0727	0809	323A	B			
323	0858	0911	323A	B		093510	W151.3
323	0913	0957	324A	A	1E		
324	1045	1056	324A	A	1E	112227	W178.1
324	1055	1144	325A	B	2S		
325	1245	1331*	326A	A		130943	E155.1
326	1420	1427	326A	A		145660	E128.3
326	1427	1518	327A	B	2S		
327	1607	1613	327A	B	2S	164417	E101.5
327	1610	1706	328A	A			
328	1755	1853	329A	B		183133	E074.7
329	1942	2040	330A	A		201850	E047.8
330	2129	2227	331A	B		220606	E021.0
331						235323	W005.8

*6.7 CHANNEL ON-OFF DIFFERENCE

325	1232	1242	325A	B
325	1245	1331	326A	A

3HR

DATA ORBIT	ON HRMN	OFF HRMN	INT ORBIT + STDN	HDRS
320	0203	0401	320R	A
321	0406	0543	321R	A
322	0551	0727	322A	A
323	0728	0913	323A	B
324	0916	1057	324A	A
325	1102	1245	325A	B
326	1247	1429	326A	A
327	1431	1614	327A	B
328	1615	1756	328A	A
329	1800	1942	329A	B
330	1945	2128	330A	A
331	2131	2315	331A	B

NEMS - SCR - ITPR

ON HRMN	OFF HRMN	INT ORBIT + STDN	HDRS
0203	0401	320R	A
0406	0543	321R	A
0550	0727	322A	A
0728	0913	323A	B
0913	1057	324A	A
1056	1245	325A	B
1245	1429	326A	A
1428	1614	327A	B
1610	1756	328A	A
1748	1942	329A	B
1942	2128	330A	A
2129	2315	331A	B

TABLE 2-2
DATA AVAILABILITY ON-OFF TIMES
5 JANUARY 1973

THIR

DATA ORBIT	11.5 + 6.7 ON HRMN	OFF HRMN	INT ORBIT + STDN	H D R S	THIR GRID CORR LALO	ASC. AND DESC. NODE TIME HRMNSS	LONG DEG
	DAYTIME THIR					**ASC. NODE**	
332						004706	E160.8
333	0202	0251	334R	A		023422	E134.0
334	0349	0438	334R	B		042139	E107.1
335	0537	0625	335R	B	1S	060855	E080.3
336	0724	0812	336A	A	2W	075612	E053.5
337	0911	1000	337A	B		094[illegible]28	E026.7
338	1058	1147	338A	A		113045	W000.2
339	1246	1334	339A	B		131002	W027.0
340	1433	1522	340A	A		150518	W053.8
341	1620	1658	341R	B	2S2W	165235	W080.6
341	1658	1709	342A	A	2S1E		
342	180[illegible]	1856	342A	A	2S1E	183951	W107.4
343	1955	2039	343A	B		202708	W134.3
344	2142	2231	344A	A	1S	221425	W161.1
	NIGHTTIME THIR					**DESC. NODE**	
332	0118	0202	334R	A		014039	W032.6
333	0251	0305	334R	A		032756	W059.4
333	0306	0349	334R	B			
334	0438	0458	334R	B		051513	W086.3
334	0505	0537	335R	B	1N		
335	0625	0647	335R	B	1N	070229	W113.1
335	0647	0724	336A	A	2W		
336	0812	0826	336A	A	2W	084946	W139.9
336	0827	0911	337A	B			
337	1000	1012	337A	B		103702	W166.7
337	1012	1058	338A	A			
338	1147	1156	338A	A		122419	E166.4
338	1158	1246	339A	B			
339	1334	1344	339A	B		141135	E139.6
339	1344	1433	340A	A			
340	1522	1529	340A	A		155852	E112.6
340	1528	1620	341R	B	2N2W		.
341	1709	1808	342A	A	2N1E	174609	E086.0
342	1856	1955	343A	B		193325	E059.2
343	2043	2142	344A	A	1N	212042	E032.4
344	2233	2329	348R	B		230758	E005.6

ESMR

DATA ORBIT	ON HRMN	OFF HRMN	INT ORBIT + STDN	H D R S
333	0118	0224	334R	A
334	0306	0500	334R	B
335	0505	0648	335R	B
336	0650	0827	336A	A
337	0830	1013	337A	B
338	1017	1159	338A	A
339	1203	1345	339A	B
340	1347	1530	340A	A
341	1531	1659	341A	B
342	1715	1859	342A	A
343	1900	2034	343A	B
344	2046	2231	344A	A
345	2233	0000	348R	B

NEMS - SCR - ITPR

ON HRMN	OFF HRMN	INT ORBIT + STDN	H D R S
0118	0306	334R	A
0307	0459	334R	B
0506	0648	335R	B
0647	0827	336A	A
0827	1013	337A	B
1013	1159	338A	A
1159	1346	339A	B
1344	1530	340A	A
1529	1659	341A	B
1659	1859	342A	A
1856	2043	343A	B
2043	2231	344A	A
2233	0031	348R	B

TABLE 2-2
DATA AVAILABILITY ON-OFF TIMES
6 JANUARY 1973

THIR

DATA ORBIT	11.5 + 6.7 ON HRMN	OFF HRMN	INT ORBIT + STDN	H D R S	THIR GRID CORR LALO	ASC. AND DESC. NODE TIME HRMNSS	LONG DEG
	DAYTIME THIR					ASC. NODE	
345	2329	0018	348R	B		000141	E172.1
346						014850	E145.3
347	0304	0352	347R	A		033614	E118.5
348	0451	0540	348R	A		052331	E091.7
349	0638	0727	349A	A		071047	E064.9
350	0826	0914*	350A	B		085604	E038.0
351	1013	1102	351A	A		104521	E011.2
352	1201	1249	352A	B		123237	W015.6
353	1348	1437	353A	A		141954	W042.4
354	1535	1624	354A	B	2S1E	160710	W069.2
355	1722	1811	355A	A		175427	W096.1
356	1910	1957	356A	B		194143	W122.9
357	2057	2144	357A	A	1E	212900	W149.7
358						231617	W176.5

*6.7 CHANNEL ON-OFF DIFFERENCE

350	0826	0900	350A	B

DATA ORBIT	11.5 + 6.7 ON HRMN	OFF HRMN	INT ORBIT + STDN	H D R S	THIR GRID CORR LALO	ASC. AND DESC. NODE TIME HRMNSS	LONG DEG
	NIGHTTIME THIR					DESC. NODE	
345	0018	0030	348R	B		005515	W021.3
346	0220	0304	347R	A		024232	W048.1
347	0352	0415	347R	A		042948	W074.9
347	0423	0451	348R	A			
348	0540	0600	348R	A		061704	W101.7
348	0606	0638	349A	A			
349	0727	0740	349A	A		080421	W128.5
349	0742	0826	350A	B			
350	0914	0926	350A	B		095138	W155.4
350	0927	1013	351A	A			
351	1102	1113	351A	A		113854	E177.8
351	1113	1201	352A	[illegible]			
352	1249	1257	352A	B		132611	E151.0
352	1259	1348	353A	A			
353	1437	1442	353A	A		151327	E124.2
353	1443	1535	354A	B	2N1E		
354	1624	1631	354A	B	2N1E	170034	E097.4
354	1631	1722	355A	A			
355	1814	1910	356A	B		184800	E070.5
356	1958	2057	357A	A	1E	203517	E043.7
357						222234	E016.9
358						000950	W009.9

ESMR

DATA ORBIT	ON HRMN	OFF HRMN	INT ORBIT + STDN	H D R S
347	0219	0417	347R	A
348	0423	0601	348R	A
349	0607	0740	349A	A
350	0743	0928	350A	B
351	0932	1115	351A	A
352	1110	1259	352A	B
353	1303	1444	353A	A
354	1447	1632	354A	B
355	1631	1815	355A	A
356	1816	1959	356A	B
357	2001	2145	357A	A

NEMS - SCR - ITPR

ON HRMN	OFF HRMN	INT ORBIT + STDN	H D R S
0221	0417	347R	A
0423	0601	348R	A
0607	0741	349A	A
0742	0927	350A	B
0928	1115	351A	A
1114	1259	352A	B
1259	1444	353A	A
1444	1633	354A	B
1631	1815	355A	A
1817	1959	356A	B
1958	2145	357A	A **

**ITPR DATA IS NOT AVAILABLE FOR THESE ORBITS.

TABLE 2-2
DATA AVAILABILITY ON-OFF TIMES
7 JANUARY 1973

THIR							
DATA ORBIT	11.5 + 6.7 ON HRMN	OFF HRMN	INT ORBIT + STDN	H D R S	THIR GRID CORR LALO	ASC. AND DESC. NODE TIME HRMNSS	LONG DEG
	DAYTIME THIR					**ASC. NODE**	
359						010333	E156.7
360	0219	0307	361R	B	1N2E	025050	E129.8
361	0406	0455	361R	A	2N	043806	E103.0
362	0553	0642	362R	A		062523	E076.2
363	0741	0829	363A	B		081240	E049.4
364	0928	1016	364A	B		095956	E022.6
365	1115	1204	365A	B		114713	W004.3
366	1303	1351	366A	A		133429	W031.1
367	1450	1538	367A	B		152146	W057.9
368	1637	1726	368A	A		170902	W084.7
369	1824	1912	369A	B		185619	W111.6
370	2011	2100	370A	A		204336	W138.4
371	2159	2246	371A	B		223052	W165.2
	NIGHTTIME THIR					**DESC. NODE**	
359	0134	0219	361R	B	1S2E	015707	W036.7
360	0307	0323	361R	B	1S2E	034423	W063.6
360	0323	0406	361R	A	2S		
361	0455	0512	361R	A	2S	053140	W090.4
361	0520	0553	362R	A			
362	0642	0702	362R	A		071856	W117.2
362	0703	0741	363A	B			
363	0829	0843	363A	B		090613	W144.0
363	0844	0928	364A	B			
364	1016	1028	364A	B		105330	W170.8
364	1029	1115	365A	B			
365	1204	1214	365A	B		124046	E162.3
365	1215	1303	366A	A			
366	1351	1401	366A	A		142803	E135.5
366	1400	1450	367A	B			
367	1538	1544	367A	B		161519	E108.7
367	1544	1637	368A	A			
368	1729	1824	369A	B		180236	E081.9
369	1913	2011	370A	A		194952	E055.1
370	2100	2159	371A	B		213709	E028.3
371	2252	2346	374R	A	2W	232426	E001.5

ESHR				
DATA ORBIT	ON HRMN	OFF HRMN	INT ORBIT + STDN	H D R S
360	0134	0324	361R	B
361	0322	0513	361R	A
362	0521	0703	362R	A
363	0706	0843	363A	B
364	0847	1029	364A	A
365	1033	1215	365A	B
366	1219	1402	366A	A
367	1403	1545	367A	B
368	1547	1729	368A	A
369	1731	1913	369A	B
370	1916	2102	370A	A
371	2102	2247	371A	B
372	2252	0050	374A	B
	NEMS - SCR - ITPR			
	0134	0323	361R	B **
	0323	0512	361R	A **
	0520	0703	362R	A **
	0703	0843	363A	B **
	0843	1029	264A	A **
	1029	1215	365A	B **
	1215	1402	366A	A **
	1401	1545	367A	B **
	1544	1730	368A	A **
	1729	1914	369A	B **
	1912	2102	370A	A **
	2059	2247	371A	B
	2252	0049	374R	B

**ITPR DATA IS NOT AVAILABLE FOR THESE ORBITS.

TABLE 2-2
DATA AVAILABILITY ON-OFF TIMES
8 JANUARY 1973

THIR

DATA ORBIT	11.5 + 6.7 ON HRMN	OFF HRMN	INT ORBIT + STDN	H D R S	THIR GRID CORR LALO	ASC. AND DESC. NODE TIME HRMNSS	NODE LONG DEG
	DAYTIME THIR					ASC. NODE	
372	2346	0035	374R	A	2E	001809	E168.0
373						020525	E141.2
374	0321	0409	374R	B		035242	E114.4
375	0508	0557	375R	B		053959	E087.6
376	0655	0744	376A	B		072715	E060.7
377	0843	0931	377A	A		091432	E033.9
378	1030	1118	378A	A		110148	E007.1
379	1217	1306	379A	A		124905	W019.7
380	1404	1453	380A	B	1W	143621	W046.5
381	•552	1631	381R	A		162338	W073.4
381	1632	1640	382A	B	1N		
382	1739	1828*	382A	B	1N	181055	W130.2
383	1926	2010	383A	A	2N	195811	W127.0
384	2114	2200	384A	B		214528	W153.8
385						233244	E179.4

*6.7 CHANNEL ON-OFF DIFFERENCE

382	1739	1811	382A	B

DATA ORBIT	ON HRMN	OFF HRMN	INT ORBIT + STDN	H D R S	THIR GRID CORR LALO	DESC. NODE TIME HRMNSS	NODE LONG DEG
	NIGHTTIME THIR					DESC. NODE	
372	0035	0048	374R	A	2E	011[illegible]2	W025.4
373	0237	0321	374R	B		025859	W052.2
374	0409	0427	374R	B		044615	W079.0
374	0438	0508	375R	B			
375	0557	0617	375R	B		063332	W105.8
375	0623	0655	376A	B			
376	0744	0758	376A	B		082048	W132.7
376	0759	0843	377A	A			
377	0931	0942	377A	A		100805	W159.5
377	0944	1030	378A	A			
378	1118	1129	378A	A		115522	E173.7
378	1131	1217	379A	A			
379	1306	1317	379A	A		134238	E146.9
379	1316	1404	380A	B	1W		
380	1500	1552	381R	A		152955	E120.1
381	1640	1739	382A	B	1S	171711	E093.2
382	1828	1926	383A	B	2S	190428	E066.4
383	2015	2114	384A	B		205144	E039.6
384						223901	E012.8
385	0005	0048	388R	A		002618	W014.0

ESMR

DATA ORBIT	ON HRMN	OFF HRMN	INT ORBIT + STDN	H D R S
374	0237	0432	374R	A
375	0438	0618	375R	A
376	0623	0755	376A	B
377	0801	0943	377A	A
378	0949	1130	378A	B
379	1135	1317	379A	A
380	1319	1500	380A	B
381	1504	1631	381A	A
382	1648	1832	382A	B
383	1832	2015	383A	A
384	2018	2202	384A	B

NEMS - SCR - ITPR

ON HRMN	OFF HRMN	INT ORBIT + STDN	H D R S
0237	0432	374R	A
0438	0618	375R	A
0623	0759	376A	B
0758	0944	377A	A
0944	1130	378A	B
1131	1318	379A	A
1317	1501	380A	B
1459	1632	381A	A
1632	1832	382A	B
1848	2017	383A	A
2014	2202	384A	B

TABLE 2-2
DATA AVAILABILITY ON-OFF TIMES
9 JANUARY 1973

THIR

DATA ORBIT	11.5 + 6.7 ON HRMN	OFF HRMN	INT ORBIT + STDN	H D R S	THIR GRID CORR LALO	ASC. AND DESC. NODE TIME HRMNSS	LONG DEG
	DAYTIME THIR					ASC. NODE	
386	0048	0137	388R	A		012001	E152.5
387	0235	0324	387R	B		030717	E125.7
388	0423	0511	388R	B	1N1E	045434	E098.9
389	0610	0659	389A	B		064151	E072.1
390	0757	0846	390A	A		082907	E045.3
391	0944	1033	391A	B		101621	E018.4
392	1132	1220	392A	A		120340	W008.4
393	1319	1408	393A	B		135057	W035.2
394	1506	1555	394A	A		153814	W062.0
395	1654	1742	395A	B	2E	172530	W088.9
396	1841	1929	396A	A		191247	W115.7
397	2028	2115	397A	B		210003	W142.5
398	2215	2303*	398A	A		224720	W169.3

*6.7 CHANNEL ON-OFF DIFFERENCE

398	2215	2250	398A	A

DATA ORBIT	ON HRMN	OFF HRMN	INT ORBIT + STDN	H D R S	THIR GRID CORR LALO	TIME HRMNSS	LONG DEG
	NIGHTTIME THIR					DESC. NODE	
386	0137	0156	388R	A		021334	W040.9
386	0152	0235	387R	B			
387	0324	0347	387R	B		040051	W067.7
387	0401	0423	388R	B	1S1W		
388	0511	0532	388R	B	1S1W	054807	W094.5
388	0538	0610	389A	B			
389	0659	0714	389A	B		073524	W121.3
389	0714	0757	390A	A			
390	0846	0857	390A	A		092240	W148.1
390	0905	0944*	391A	B			
391	1033	1043	391A	B		110957	W175.0
391	1044	1132	392A	A			
392	1220	1230	392A	A		125714	E158.2
392	1232	1319	393A	B			
393	1408	1415	393A	B		144430	E131.4
393	1416	1506	394A	A			
394	1555	1600	394A	A		163147	E104.6
394	1601	1654	395A	B	2E		
395	1746	1841	396A	A		181903	E077.8
396	1929	2028	397A	B		200620	E051.0
397	2117	2215	398A	A		215336	E024.2
398	2305	0003	401R	B		234053	W002.7

*6.7 CHANNEL ON-OFF DIFFERENCE

390	0858	0944	391A	B

ESMR

DATA ORBIT	ON HRMN	OFF HRMN	INT ORBIT + STDN	H D R S
386	0005	0157	388R	A
387	0152	0349	387R	B
388	0354	0533	388R	B
389	0538	0715	389A	B
390	0716	0859	390A	A
391	0903	1044	391A	B
392	1050	1233	392A	A
393	1245	1418	393A	B
394	1420	1601	394A	A
395	1603	1746	395A	B
396	1748	1930	396A	A
397	1933	2116	397A	B
398	2119	2304	398A	A

NEMS - SCR - ITPR

0005	0157	388R	A
0152	0349	387R	B
0354	0533	388R	B
0538	0715	389A	B
0714	0859	390A	A
0858	1044	391A	B
1045	1231	392A	A
1232	1418	393A	B
1416	1601	394A	A
1601	1746	395A	B
1746	1930	396A	A
1929	2117	397A	B
2117	2304	398A	A
2305	0105	401R	B

TABLE 2-2
DATA AVAILABILITY ON-OFF TIMES
10 JANUARY 1973

THIR

DATA ORBIT	11.5 + 6.7 ON HRMN	OFF HRMN	INT ORBIT + STDN	H D R S	THIR GRID CORR LALO	ASC. AND DESC. NODE TIME HRMNSS	NODE LONG DEG
	DAYTIME THIR					ASC. NODE	
399	0003	0051	401R	B		003437	E163.9
400						022153	E137.1
401	0337	0426	401R	A		040910	E110.3
402	0525	0613	402R	A		055626	E083.5
403	0712	08[illegible]	403A	B		074343	E056.6
404	0859	0946	404A	A		093059	E029.8
405	1046	1335	405A	B		111816	E003.0
406	1234	1322	406A	A		130532	W023.8
407	1421	1502	407R	B		145249	W050.7
407	1502	1510	408R	A			
408	1608	1646	408R	A		164006	W077.5
408	1646	1657	409A	B			
409	1755	1843	409A	B		182722	W104.3
410	1943	2031	410A	A		201439	W131.1
411	2130	2219	411A	B	3N	220155	W157.9
412						234[illegible]12	E175.2
	NIGHTTIME THIR					DESC. NODE	
399	0051	0104	401R	B		012810	W029.5
400	0252	0337	401R	A		031526	W0[illegible]6.3
401	0426	0446	401R	A		050243	W083.1
401	0452	0525	402R	A			
402	0613	0634	402R	A		064959	W109.9
402	0634	0712	403A	B			
403	0800	0815	403A	B		083716	W136.8
403	0815	0859	404A	A			
404	0948	0954*	404A	A		102432	W163.6
404	1000	1046	405A	B			
405	1135	1148	405A	B		121149	E169.6
405	1148	1234	406A	A			
406	1322	1332	406A	A		135906	E142.8
406	1331	1421	407R	B			
407	1510	1608	408R	A		154622	E116.0
408	1657	1755	409A	B		173339	E089.1
409	1844	1943	410A	A		192055	E062.3
410	2032	2130	411A	B	3S	210812	E035.5
411						225528	E008.7
412	0022	0105	415R	B		004245	W018.1

*6.7 CHANNEL ON-OFF DIFFERENCE
404 0948 0954 NO DATA

ESMR

DATA ORBIT	ON HRMN	OFF HRMN	INT ORBIT + STDN	H D R S
399	2305	0105	401R	B
401	0252	0446	401R	A
402	0452	0635	402R	A
403	0638	0816	403A	B
404	0818	1000	404A	A
405	1005	1149	405A	B
406	1151	1333	406A	A
407	1335	1504	407A	B
408	1[illegible]20	1645	408A	A
409	1703	1844	409A	B
410	1848	2032	410A	A
411	2034	2220	411A	B

NEMS - SCR - ITPR

ON HRMN	OFF HRMN	INT ORBIT + STDN	H D R S
0253	0447	401R	A
0453	0635	402R	A
0634	0816	403A	B
0815	1000	404A	A
1000	1149	405A	B
1148	1332	406A	B
1332	1504	407A	B
1502	1645	408A	A
1646	1[illegible]44	409A	B
1843	2032	410A	B
2031	2219	411A	B

TABLE 2-2
DATA AVAILABILITY ON-OFF TIMES
11 JANUARY 1973

THIR

DATA ORBIT	11.5 + 6.7 ON HRMN	OFF HRMN	INT ORBIT + STDN	H D R S	THIR GRID CORR LALO	ASC. AND DESC. NODE TIME HRMNSS	LONG DEG
	DAYTIME THIR					ASC. NODE	
413	0105	0153	415R	B		013629	E148.4
414	0252	0340	414R	A		032345	E121.6
415	0439	0528	415R	A		051102	E094.8
416	0626	0715	416A	A	1E	065818	E068.0
417	0814	0902	417A	B		084535	E041.1
418	1001	1050	418A	A		103251	E014.3
419	1148	1237	419A	B	1W	122008	W012.5
420	1336	1424	420A	A	1N	140725	W039.3
421	1523	1611	421A	B	1S	155441	W066.1
422	1710	1759	422A	A		174158	W093.0
423	1857	1945	423A	B	1E	192914	W119.8
424	2045	2133	424A	A		211631	W146.6
425	2232	2320	425A	B		230347	W173.4
	NIGHTTIME THIR					DESC. NODE	
413	0153	0214	415R	C		023002	W045.0
413	0213	0252	414R	A			
414	0340	0402	414R	A		041718	W071.8
414	0409	0439	415R	A			
415	0528	0547	415R	A		060435	W098.6
415	0554	0626	416A	A	1E		
416	0715	0728	416A	A	1E	075151	W125.4
416	0729	0814	417A	B			
417	0902	0910*	417A	B		093908	W152.3
417	0916	1001	418A	A			
418	1050	1101	418A	A		112624	W179.1
418	1102	1148	419A	B	1W		
419	1237	1247	419A	B	1W	131341	E154.1
419	1248	1336	420A	A	1S		
420	1424	1431	420A	A	1S	150057	E127.3
420	1432	1523	421A	B	1N		
421	1611	1617	421A	B	1N	164814	E100.5
421	1617	1710	422A	A			
422	1802	1857	423A	B	1E	183531	E073.7
423	1946	2045	424A	A		202247	E046.9
424	2133	2232	425A	B		221004	E020.0
425	2322	0019	428R	A		235720	W006.8

*6.7 CHANNEL ON-OFF DIFFFRENCE
417 0902 0915 417A B

ESMR

DATA ORBIT	ON HRMN	OFF HRMN	INT ORBIT + STDN	H D R S
413	0022	0216	415R	B
414	0213	0403	414R	A
415	0408	0548	415R	A
416	0554	0729	416A	A
417	0732	0916	417A	B
418	0920	1102	418A	A
419	1106	1248	419A	B
420	1251	1432	420A	A
421	1436	1617	421A	B
422	1619	0804	422A	A
423	1804	1947	423A	B
424	1949	2134	424A	A
425	2136	2323	425A	B

NEMS - SCR - ITPR

ON HRMN	OFF HRMN	INT ORBIT + STDN	H D R S
0022	0215	415R	B
0213	0403	414R	A
0409	0548	415R	A
0554	0730	416A	A
0729	0916	417A	B
0916	1102	418A	A
1102	1248	419A	B
1248	1432	420A	A
1432	1617	421A	B
1617	1804	422A	A
1803	1947	423A	B
1946	2134	424A	A
2132	2323	425A	B
2322	0123	428R	A

TABLE 2-2
DATA AVAILABILITY ON-OFF TIMES
12 JANUARY 1973

THIR

DATA ORBIT	11.5 + 6.7 ON HRMN	OFF HRMN	INT ORBIT + STDN	H D R S	THIR GRID CORR LALO	ASC. AND DESC. NODE TIME HRMNSS	LONG DEG
	DAYTIME THIR					ASC. NODE	
426	0019	0108	428R			005105	E159.0
427						023021	E133.0
428	0354	0442	428R	B	1E	042537	E106.2
429	0541	0630	429R	B		061254	E079.3
430	0728	0817	430A	A		080610	E052.5
431	0915	1004	431A	B		094727	E025.7
432	1103	1151	432A	A		113444	W001.1
433	1250	1339	433A	B		132206	W028.8
434	1437	1526	434A	A		150917	W054.8
435	1625	1713	435A	B	2N	165633	W081.6
436	1812	1901	436A	A		184350	W108.4
437	1959	2047	437A	B		203106	W135.2
438	2147	2234	438A	A		221823	W162.1
	NIGHTTIME THIR					DESC. NODE	
426	0108	0122	428R	A		014437	W033.6
427	0314	0354	428R	B	1E	033153	W060.4
428	0442	0502	428R	B	1E	051910	W087.2
428	0502	0541	429R	B			
429	0630	0650	429R	B		070627	W114.1
429	0652	0728	430A	A			
430	0727	0830	430A	A		085343	W140.9
430	0831	0916	431A	B			
431	1004	1017	431A	B		104060	W167.7
431	1017	1103	432A	A			
432	1151	1203	432A	A		122016	E165.5
432	1203	1250	433A	B			
433	1339	1349	433A	B		141533	E138.7
433	1350	1437	434A	A			
434	1526	1532	434A	A		160249	E111.8
434	1532	1625	435A	B	2S		
435	1716	1812	436A	A		175006	E085.0
436	1901	1959	437A	B		193723	E058.2
437	2048	2147	438A	A		212439	E031.4
438						231156	E004.6

ESMR

DATA ORBIT	ON HRMN	OFF HRMN	INT ORBIT + STDN	H D R S
426	2322	0122	428R	A
428	0314	0503	428R	B
429	0507	0652	429R	B
430	0654	083[illegible]	430A	A
431	0835	10[illegible]	431A	B
432	1022	1204	432A	A
433	1207	1351	433A	B
434	1351	1533	434A	A
435	1535	1717	435A	B
436	1720	1902	436A	A
437	1900	2048	437A	B
438	2047	2235	438	A

NEMS - SCR - ITPR

ON HRMN	OFF HRMN	INT ORBIT + STDN	H D R S
0315	0503	428R	B
0509	0652	429R	B
0652	0831	430A	A
0831	1016	431A	B
1017	1204	432A	A
1203	1351	433A	B
1350	1533	434A	A
1531	1717	435A	B
1716	1902	436A	A
1900	2048	437A	B
2047	2235	438A	A

TABLE 2-2
DATA AVAILABILITY ON-OFF TIMES
13 JANUARY 1973

THIR

DATA ORBIT	11.5 * 6.7 ON HRMN	OFF HRMN	INT ORBIT * STDN	H D R S	THIR GRID CORR LALO	ASC. AND DESC. NODE TIME HRMNSS	NODE LONG DEG
	DAYTIME THIR					ASC. NODE	
439						000540	E171.1
440	0121	0210	442R	B		015256	E144.3
441	0306	0357	441R	A		034013	E117.5
442	0456	0544	442R	A		052729	E090.7
443	0643	0732	443A	A		071446	E063.8
444	0830	0919*	444A	B		090202	E037.0
445	1018	1106	445A	A		104919	E010.2
446	1205	1253	446A	B		123636	W016.6
447	1352	1441	447A	A	1E	142352	W043.4
448	1539	1628	448A	B	1N1W	161109	W070.3
449	1727	1815	449A	A		175825	W097.1
450	1914	2000	450A	B		194542	W123.9
451	2101	2150	451A	A		213259	W150.7
452						232015	W177.5

*6.7 CHANNEL ON-OFF DIFFERENCE
444 0830 0919 NO DATA

DATA ORBIT	11.5 * 6.7 ON HRMN	OFF HRMN	INT ORBIT * STDN	H D R S	THIR GRID CORR LALO	ASC. AND DESC. NODE TIME HRMNSS	NODE LONG DEG
	NIGHTTIME THIR					DESC. NODE	
439	0037	0121	442R	B		005912	W022.3
440	0218	0229	442R	B		024629	W049.1
440	0224	0308	441R	A			
441	0357	0416	441R	A		043345	W075.9
441	0425	0456	442R	A			
442	0510	0643*	443A	A		062102	W102.7
443	0732	0744	443A	A		080819	W129.5
443	0746	0830*	444A	B			
444	0919	0931*	444A	B		095535	W156.4
444	0932	1018	445A	A			
445	1106	1118	445A	A		114252	E176.6
445	1118	1205	446A	B			
446	1253	1305	446A	B		133008	E150.0
446	1306	1352	447A	A	1E		
447	1441	1448	447A	A	1E	151725	E123.2
447	1449	1539	448A	B	1S1W		
448	1633	1727	449A	A		170441	E096.4
449	1817	1914	450A	B		185158	E069.5
450	2003	2101	451A	A		203915	E042.7
451						222631	E015.9
452	2359	0036	455R	B		001348	W010.9

*6.7 CHANNEL ON-OFF DIFFERENCE

442	0544	0604	442R	A
442	0610	0643	443A	A
443	0746	0830	NO DATA	
444	0919	0931	NO DATA	

ESMR

DATA ORBIT	ON HRMN	OFF HRMN	INT ORBIT * STDN	H D R S
440	0037	0229	442R	B
441	0224	0418	441R	A
442	0424	0606	442R	A
443	0610	0745	443A	A
444	0749	0932	444A	B
445	0936	1119	445A	A
446	1122	1305	446A	B
447	1307	1449	447A	A
448	1451	1632	448A	B
449	1635	1816	449A	A
450	1820	2001	450A	B
451	2005	2151	451A	A

NEMS - SCR - ITPR

ON HRMN	OFF HRMN	INT ORBIT * STDN	H D R S
0038	0229	442R	B
0225	0418	441R	A
0425	0605	442R	A
0610	0745	443A	A
0746	0932	444A	B
0932	1119	445A	A
1118	1306	446A	B
1306	1449	447A	A
1449	1632	448A	B
1633	1817	449A	A
1817	2001	450A	B
2001	2151	451A	A
2359	0147	455R	B

TABLE 2-2
DATA AVAILABILITY ON-OFF TIMES
14 JANUARY 1973

THIR

DATA ORBIT	11.5 + 6.7 ON HRMN	OFF HRMN	INT ORBIT + STDN	HDRS	THIR GRID CORR LALO	ASC. AND DESC. NODE TIME HRMNSS	LONG DEG
	DAYTIME THIR					ASC. NODE	
453	0036	0124	455R	B		010732	E155.7
454						025448	E128.9
455	0410	0459	455R	A		044205	E102.0
456	0558	0646	456R	A		062921	E075.2
457	0745	0833	457A	B		081638	E048.4
458	0932	1021	458A	A		100355	E021.6
459	1119	1208	459A	B		115111	W005.2
460	1307	1355	460A	A		133828	W032.1
461	1454	1543	461A	B		152544	W058.9
462	1641	1729	462A	A		171301	W085.7
463	1829	1916	463A	B		190017	W112.5
464	2016	2103	464A	A		204734	W139.4
465	2203	2249	465A	B		223451	W166.2
	NIGHTTIME THIR					DESC. NODE	
453	0124	0147	455R	B		020104	W037.7
454	0326	0410	455R	A		034821	W064.5
455	0459	0520	455R	A		053537	W091.3
455	0527	0558	456R	A			
456	0646	0706	456R	A		072254	W118.2
456	0707	0745	457A	B			
457	0833	0847	457A	B		091011	W145.0
457	0847	0932	458A	A			
458	1021	1032	458A	A		105727	W171.8
458	1033	1119	459A	B			
459	1208	1218	459A	B		124444	E161.4
459	1218	1307	460A	A			
460	1355	1403	460A	A		143200	E134.5
460	1405	1454	461A	B			
461	1549	1641	462A	A		161917	E107.7
462	1732	1829	463A	B		180633	E080.9
463	1917	2016	464A	A		195350	E054.1
464	2105	2203	465A	B		214106	E027.3
465						232823	E000.4

ESMR

DATA ORBIT	ON HRMN	OFF HRMN	INT ORBIT + STDN	HDRS
453	2358	0147	455R	B
455	0324	0518	455R	A
456	0526	0706	456R	A
457	0710	0848	457A	B
458	0851	1033	458A	A
459	1038	1219	459A	B
460	1223	1404	460A	A
461	1407	1548	461A	B
462	1551	1732	462A	A
463	1736	1917	463A	B
464	1921	2104	464A	A
465	2107	2250	465A	B

NEMS - SCR - ITPR

ON HRMN	OFF HRMN	INT ORBIT + STDN	HDRS
0326	0518	455R	A
0527	0706	456R	A
0708	0848	457A	B
0847	1033	458A	A
1033	1219	459A	B
1218	1404	460A	A
1405	1548	461A	B
1549	1732	462A	A
1731	1917	463A	B
1917	2104	464A	A
2105	2251	465A	B

TABLE 2-2
DATA AVAILABILITY ON-OFF TIMES
15 JANUARY 1973

THIR

DATA ORBIT	11.5 + 6.7 ON HRMN	OFF HRMN	INT ORBIT + STDN	H D R S	THIR GRID CORR LALO	ASC. AND DESC. NODE TIME HRMNSS	LONG DEG
	DAYTIME THIR					ASC. NODE	
466						002207	E167.0
467	0138	0226	468R	A		020924	E140.2
468	0325	0414	468R	B		035640	E113.4
469	0512	0601	469R	B		054357	E086.6
470	0659	0748	470A	A		073114	E059.7
471	0847	0935	471A	B	1N	091830	E032.9
472	1034	1123	472A	A		110547	E006.1
473	1221	1310	473A	B		125303	W020.8
474	1409	1457	474A	A		144020	W047.6
475	1556	1644	475A	B		162736	W074.4
476	1743	1831	476A	A		181453	W101.2
477	1930	2018	477A	B		200210	W128.0
478	2118	2206	478A	A		214926	W154.9
479	2305	2354	482R	B		233643	E178.3
	NIGHTTIME THIR					DESC. NODE	
466	0054	0138	468R	A		011540	W026.4
467	0226	0243	468R	A		030256	W053.2
467	0241	0325	468R	B			
468	0414	0433	468R	P		045013	W080.0
468	0441	0512	469R	B	4N		
469	0601	0621	469R	B		063729	W106.8
469	0623	0659	470A	A			
470	0748	0803	470A	B		082446	W133.7
470	0804	0847	471A	B	1S		
471	0935	0948	471A	B	1S	101202	W160.5
471	0949	1034	472A	A			
472	1123	1133	472A	A		115919	E172.7
472	1134	1221	473A	B			
473	1310	1319	473A	B		134636	E145.9
473	1321	1409	474A	A			
474	1457	1504	474A	A		153352	E119.0
474	1505	1556	475A	B			
475	1649	1743	476A	A		172109	E092.2
476	1833	1930	477A	B		190625	E065.4
477	2019	2118	478A	A		205542	E038.6
478	2209	2305	482R	B		224258	E011.8
479	2354	0009	482R	B		003015	W015.8

ESMR

DATA ORBIT	ON HRMN	OFF HRMN	INT ORBIT + STDN	H D R S
467	0053	0243	468R	A
468	0240	0433	468R	B
469	0440	0622	469R	B
470	0626	0803	470A	A
471	0805	0949	471A	B
472	0948	1136	472A	A
473	1139	1320	473A	B
474	1323	1505	474A	A
475	1507	1648	475A	B
476	1651	1832	476A	A
477	1836	2019	477A	B
478	2022	2208	478A	A
479	2208	0009	482R	B

NEMS - SCR - ITPR

ON HRMN	OFF HRMN	INT ORBIT + STDN	H D R S
0054	0243	468R	A
0241	0433	468R	B
0439	0622	469R	B
0623	0803	470A	A
0804	0949	471A	B
0949	1134	472A	A
1134	1328	473A	B
1321	1505	474A	A
1505	1648	475A	B
1649	1832	476A	A
1832	2013	477A	B
2018	2208	478A	A
2209	0009	481R	B

TABLE 2-2
DATA AVAILABILITY ON-OFF TIMES
16 JANUARY 1973

THIR

DATA ORBIT	11.5 + 6.7 ON HRMN	OFF HRMN	INT ORBIT + STDN	H D R S	THIR GRID CORR LALO	ASC. AND DESC. NODE TIME HRMNSS	LONG DEG
	DAYTIME THIR					**ASC. NODE**	
480						012359	E151.5
481	0240	0328	481R	A		031116	E124.7
482	0427	0516	482R	A		045832	E097.9
483	0614	0703	483A	A		064549	E071.1
484	0801	0850	484A	B	3N	083306	E044.2
485	0949	1037	485A	A		102022	E017.4
486	1136	1225	486A	B		120739	W009.4
487	1323	1412	487A	A		135455	W036.2
488	1511	1559	488A	B		154212	W063.0
489	1658	1746	489A	A		172928	W089.9
490	1845	1934	490A	B		191645	W116.7
491	[illegible]	2120	491A	A		210402	W143.5
492	2220	2308	492A	B		225118	W170.3
	NIGHTTIME THIR					**DESC. NODE**	
480	0156	0240	481R	A		021732	W041.9
481	0320	0350	481R	A		040448	W068.7
481	0358	0427	482R	A			
482	0516	0534	482R	A		055205	W095.5
482	0541	0614	483A	A			
483	0703	0713	483A	A		073921	W122.3
483	0720	0801	484A	B	3S		
484	0850	0904	484A	B	3S	092638	W149.2
484	0904	0949	485A	A			
485	1037	1048	485A	A		111354	W176.0
485	1049	1136	486A	B			
486	1225	1235	486A	B		130111	E157.2
486	1236	1323	487A	A			
487	1412	1419	487A	A		144828	E130.4
487	1420	1511	488A	B			
488	1559	1605	488A	B		163544	E103.6
488	1611	1658*	489A	A			
489	1750	1845	490A	B		182301	E076.8
490	1935	2032	491A	A		201017	E049.9
491	2121	2220	492A	B		215734	E023.1
492						234450	W003.7

*6.7 CHANNEL ON-OFF DIFFERENCE

488	1603	1658	489A	A

ESMR

DATA ORBIT	ON HRMN	OFF HRMN	INT ORBIT + STDN	H D R S
481	0155	0351	481R	A
482	0357	0532	482R	A
483	0541	0718	483A	A
484	0720	0904	484A	B
485	0908	1049	485A	A
486	1054	1235	486A	B
487	1239	1419	487A	A
488	1423	1605	488A	B
489	1607	1750	489A	A
490	1752	1935	490A	B
491	1937	2121	491A	A
492	2123	2309	492A	B

NEMS - SCR - ITPR

ON	OFF	INT ORBIT + STDN	HDRS
0156	0351	481R	A
0356	0532	482R	A
0540	0718	483A	A
0719	0905	484A	B
0904	1049	485A	A
1049	1236	486A	B
1235	1419	487A	A
1419	1605	488A	B
1605	1750	489A	A
1750	1935	490A	B
1935	2121	491A	A
2120	2309	492A	B

TABLE 2-2
DATA AVAILABILITY ON-OFF TIMES
17 JANUARY 1973

THIR

DATA ORBIT	11.5 * 6.7 ON HRMN	OFF HRMN	INT ORBIT + STDN	H D R S	THIR GRID CORR LALO	ASC. AND DESC. NODE TIME HRMNSS	LONG DEG
	DAYTIME THIR					ASC. NODE	
493						003835	E162.9
494	0154	0243	495R	A		022551	E136.1
495	0342	0430	495R	B		041308	E109.2
496	0529	0617	496R	B		060025	E082.4
497	0716	0805	497A	A		074741	E055.6
498	0903	0952	498A	B	1S1E	093458	E028.8
499	1051	1139	499A	A		112214	E002.0
500	1238	1327	500A	B		130931	W624.9
501	1425	1514	501A	A	1E	145647	W051.7
502	1613	1701	502A	B		164404	W078.5
503	1800	1847	503A	A		183121	W105.3
504	1947	2035	504A	B	1N	201837	W132.1
505	2134	2223	505A	A		220554	W159.0
506	2322	0010	509R	B		235310	E174.2
	NIGHTTIME THIR					DESC. NODE	
493	0111	0154	495R	A		013207	W030.5
494	0243	0301	495R	A		031924	W057.3
494	0257	0342	495R	B			
495	0430	0449	495R	B		050648	W084.2
495	0457	0529	496R	B			
496	0617	0630*	496R	B		065357	W111.0
496	0639	0716	497A	A			
497	0805	0817	497A	A		084113	W137.8
497	0818	0903	498A	B	1N1W		
498	0952	1000	498A	B	1N1W	102830	W164.6
498	1004	1051	499A	A			
499	1139	1149	499A	A		121546	E168.6
499	1150	1326	500A	B			
500	1327	1336	500A	B		140303	E141.8
500	1335	1425	501A	A	1W		
501	1521	1613	502A	B		155019	E114.9
502	1705	1800	503A	A		173736	E088.1
503	1848	1947	504A	B	1S	192453	E061.3
504	2036	2134	505A	A		211209	E034.5
505	2225	2322	509R	B		225926	E007.7
506	0010	0022	509R	B		004642	W019.2

*6.7 CHANNEL ON-OFF DIFFERENCE

496	0617	0637	496R	B

ESMR

DATA ORBIT	ON HRMN	OFF HRMN	INT ORBIT + STDN	H D R S
494	0111	0301	495R	A
495	0258	0446	495R	B
496	0457	0639	496R	B
497	0643	0819	497A	A
498	0822	1004	498A	B
499	1009	1150	499A	A
500	1155	1336	500A	B
501	1339	1521	501A	A
502	1523	1705	502A	B
503	1707	1847	503A	A
504	1852	2037	504A	B
505	2038	2224	505A	A
506	2225	0023	509R	B

NEMS - SCR - ITPR

ON HRMN	OFF HRMN	INT ORBIT + STDN	H D R S
0111	0301	495R	A
0257	0446	495R	B
0457	0638	496R	B
0639	0819	497A	A
0818	1004	498A	B
1004	1150	499A	A
1150	1336	500A	B
1335	1521	501A	A
1520	1705	502A	B
1705	1847	503A	A
1846	2037	504A	B
2035	2225	505A	A
2225	0023	509R	B

TABLE 2-2
DATA AVAILABILITY ON-OFF TIMES
18 JANUARY 1973

THIR

DATA ORBIT	11.5 + 6.7 ON HRMN	OFF HRMN	INT ORBIT + STDN	H D R S	THIR GRID CORR LALO	ASC. AND DESC. NODE TIME HRMNSS	LONG DEG
	DAYTIME THIR					**ASC. NODE**	
507						014027	E147.4
508	0256	0345	508R	A		032743	E120.6
509	0443	0532	509R	A		051500	E093.8
510	0631	0719	510A	A		070217	E066.9
511	0818	0907	511A	B		084933	E040.1
512	1005	1054	512A	A		103656	E013.3
513	1153	1241	513A	B		122406	W013.5
514	1340	1428	514A	A		141123	W040.3
515	1527	1616	515A	B		155840	W067.2
516	1714	1803	516A	A		174556	W094.0
517	1902	1949	517A	B		193313	W120.8
518	2049	2136	518A	A		212029	W147.6
519						230746	W174.4
	NIGHTTIME THIR					**DESC. NODE**	
507	0211	0256	508R	A		023359	W0[illegible]
508	0345	0404	508R	A		042115	W0[illegible]
508	0414	0443	509R	A			
509	0532	0553	509R	A		060832	W099.6
509	0559	0631	510A	A			
510	0719	0734	510A	A		075549	W126.4
510	0734	0818	511A	B			
511	0907	0921	511A	B		094305	W153.3
511	0921	1005	512A	A			
512	1054	1106	512A	A		113022	E179.9
512	1105	1153	513A	B			
513	1241	1252	513A	B		131738	E153.1
513	1251	1340	514A	A			
514	1428	1436	514A	A		150455	E126.3
514	1436	1527	515A	B			
515	1622	1714	516A	A		165211	E099.5
516	1806	1902	517A	B		183[illegible]28	E072.7
517	1950	2049	518A	A		202645	E045.8
518						221401	E019.0
519						000118	W007.8

ESMR

DATA ORBIT	ON HRMN	OFF HRMN	INT ORBIT + STDN	H D R S
508	0211	0437	508R	A
509	0415	0553	509R	A
510	0559	0735	510A	A
511	0736	0922	511A	B
512	0924	1107	512A	A
513	1110	1254	513A	B
514	1255	1430	514A	A
515	1439	1622	515A	B
516	1623	1806	516A	A
517	1808	1950	517A	B
518	1953	2137	518A	A

NEMS - SCR - ITPR

ON HRMN	OFF HRMN	INT ORBIT + STDN	H D R S
0211	0407	508R	A
0414	0554	509R	A
0558	0735	510A	A
0734	0922	511A	B
0921	1107	512A	A
1105	1253	513A	B
1251	1437	514A	A
1436	1622	515A	B
1621	1806	516A	A
1759	1949	517A	B
1949	2137	518A	A

TABLE 2-2
DATA AVAILABILITY ON-OFF TIMES
19 JANUARY 1973

THIR

DATA ORBIT	11.5 + 6.7 ON HRMN	OFF HRMN	INT ORBIT + STDN	H D R S	THIR GRID CORR LALC	ASC. AND DESC. NODE TIME HRMNSS	LONG DEG
	DAYTIME THIR					ASC. NODE	
520						005502	E150.8
521	0211	0259	522R	A	1N	024219	E131.9
522	0358	0447	522R	B	1N1E	042936	E105.1
523	0545	0634	523R	B		061652	E078.3
524	0733	0821	524A	A		080409	E051.5
525	0920	1009	525A	B		095125	E024.7
526	1107	1156	526A	A		113842	W002.2
527	1254	134[illegible]	527A	B		132558	W029.0
528	1442	1530	528A	A		151315	W055.8
529	1629	1718	529A	B		170032	W082.6
530	1816	1903	530A	A		184748	W109.4
531	2004	2052	531A	B		203505	W136.3
532	2151	2239	532A	A		222221	W163.1
	NIGHTTIME THIR					DESC. NODE	
520	0125	0211	522R	A	1S	014834	W034.6
521	0259	0315	522R	A	1S	033551	W061.5
521	0314	0358	522R	B	1S1W		
522	0447	0507	522R	B	1S1[illegible]	052307	W088 3
522	0514	0545	523R	B			
523	0634	0656	523R	B		071024	W115.1
523	0655	0733	524A	A			
524	0821	0836	524A	A		085741	W141.9
524	0836	0920	525A	B			
525	1009	1023	525A	B		104457	W168.7
525	1021	1107	526A	A			
526	1156	1209	526A	A		123214	E164.5
526	1206	1254	527A	B			
527	1343	1354	527A	B		141930	E137.6
527	1355	1442	528A	A			
528	1530	1538	528A	A		160647	E110.8
528	1538	1629	529A	B			
529	1722	1816	530A	A		175403	E084.0
530	1905	2004	531A	B		194120	E057.2
531	2053	2151	532A	A		212837	E030.4
532	2241	2338	535R	B		231553	E003.5

ESMR

DATA ORBIT	ON HRMN	OFF HRMN	INT ORBIT + STDN	H D R S
521	0125	0315	522R	A
522	0313	0438	522R	B
523	0510	0655	523R	B
524	0655	0837	524A	A
525	0835	1024	525A	B
526	1021	1210	526A	A
527	1206	1355	527A	B
528	1355	1539	528A	A
529	1538	1723	529A	B
530	1721	1906	530A	A
531	1904	2054	531A	B
532	2052	2240	532A	A

NEMS - SCR - ITPR

ON HRMN	OFF HRMN	INT ORBIT + STDN	H D R S
0125	0315	522R	B
0313	0508	522R	A
0513	0657	523R	B
0655	0837	524A	A
0835	1024	525A	B
1021	1210	526A	A
1206	1355	527A	B
1355	1539	528A	A
1538	1722	529A	B
1722	1906	530A	A
1905	2054	531A	B
2053	2240	532A	A
2241	[illegible]	535R	B

TABLE 2-2
DATA AVAILABILITY ON-OFF TIMES
20 JANUARY 1973

THIR

DATA ORBIT	11.5 + 6.7 ON HRMN	OFF HRMN	INT ORBIT + STDN	H D R S	THIR GRID CORR LALO	ASC. AND DESC. NODE TIME HRMNSS	LONG DEG
	DAYTIME THIR					ASC. NODE	
533	2338	0027	535R	B		000938	E170.1
534						015654	E143.3
535	0313	0401	535R	A		034411	E116.5
536	0500	0549	536R	A		053128	E089.7
537	0647	0736	537A	A		071844	E062.8
538	0835	0923	538A	A		090601	E036.0
539	1022	1110	539A	B		105317	E009.2
540	1209	1258	540A	A		124034	W017.6
541	1356	1445	541A	B	1E	142750	W044.5
542	1544	1632	542A	A	1E	161507	W071.3
543	1731	1820	543A	B		180224	W098.1
544		*				194940	W124.9
545	2106	2153	545A	B		213657	W151.7
546						232413	W178.5
*6.7 CHANNEL ON-OFF DIFFERENCE							
544	1918	2004	544A	A			
	NIGHTTIME THIR					DESC. NODE	
533	0027	0040	535R	B		010310	W023.3
534	0230	0313	535R	A		025026	W050.1
535	0401	0422	535R	A		043743	W076.9
535	0428	0500	536R	A			
536	0549	0611	536R	A		062459	W103.7
536	0612	0647	537A	A			
537	0736	0750	537A	A		081216	W130.6
537	0750	0835	538A	A			
538	0923	0936	538A	A		095932	W157.4
538	0935	1022	539A	B			
539	1110	1122	539A	B		114649	E175.8
539	1121	1209	540A	A			
540	1258	1309	540A	A		133406	E149.0
540	1308	1356	541A	B	1W		
541	1445	1452	541A	B	1W	152122	E122.2
541	1452	1544	542A	A	1W		
542	1632	1638*	542A	A	1W	170839	E095.4
542	1637	1731	543A	B			
543		*				185555	E068.5
544	2007	2106	545A	B		204312	E041.7
545						223029	E014.9
546						001745	W011.9
*6.7 CHANNEL ON-OFF DIFFERENCE							
542	1632	1638	NO DATA				
543	1822	1918	544A	A			

ESMR

DATA ORBIT	ON HRMN	OFF HRMN	INT ORBIT + STDN	H D R S
533	2241	0040	535R	B
535	0231	0423	535R	A
536	0428	0612	536R	A
537	0611	0751	537A	B
538	0750	0937	538A	A
539	0935	1123	539A	B
540	1122	1310	540A	A
541	1308	1452	541A	B
542	1452	1638	542A	A
543	1637	1821	543A	B
544	1822	2005	544A	A
545	2004	2153	545A	B

NEMS - SCR - ITPR

ON HRMN	OFF HRMN	INT ORBIT + STDN	H D R S
0230	0422	535R	A
0428	0612	536R	A
0611	0751	537A	B
0750	0937	538A	A
0935	1123	539A	B
1122	1310	540A	A
1308	1453	541A	B
1452	1638	542A	A
1637	1822	543A	B
1822	2005	544A	A
2004	2154	545A	B

TABLE 2-2
DATA AVAILABILITY ON-OFF TIMES
21 JANUARY 1973

THIR

DATA ORBIT	11.5 + 6.7 ON HRMN	OFF HRMN	INT ORBIT + STDN	H D R S	THIR GRID CORR LALO	ASC. AND DESC. NODE TIME HRMNSS	LONG DEG
	DAYTIME THIR					ASC. NODE	
547						011130	E154.6
548	0227	0316	549R	A		025847	E127.8
549	0415	0503	549R	B	1S	044603	E101.0
550	0602	0651	550R	B		063320	E074.2
551	0749	0838	551A	A		082036	E047.4
552	0936	1025	552A	B	1N1E	100753	E020.5
553	1124	1212	553A	A		115509	W006.3
554	1311	1400	554A	B		134226	W033.1
555	1458	1547	555A	A		152943	W059.9
556	1646	1734	556A	B		171659	W086.7
557	1833	1920	557A	A		190416	W113.6
558	2020	2106	558A	B		205132	W140.4
559	2207	2254	559A	A		223849	W167.2
	NIGHTTIME THIR					DESC. NODE	
547	0143	0227	549R	A		020502	W038.7
548	0316	0329	549R	A		035218	W065.6
548	0331	0415	549R	B	1N		
549	0503	0524	549R	B	1N	053935	W092.4
549	0531	0602	550R	B			
550	0651	0711	550R	B		072651	W119.2
550	0712	0749	551A	A			
551	0838	0852	551A	A		091408	W146.0
551	0852	0936	552A	B	1S1W		
552	1025	1038	552A	B	1S1W	110124	[illegible]172.8
552	1038	1124	553A	A			
553	1212	1224	553A	A		124841	E160.3
553	1223	1311	554A	B			
554	1400	1407*	554A	B		143558	E133.5
554	1407	1458*	555A	A			
555	1552	1646	556A	B		162314	E106.7
556	1738	1833	557A	A		181031	E079.9
557	1922	2020	558A	B		195747	E053.1
558	2109	2207	559A	A		214504	E026.3
559	2258	2355	562R	B		233220	W000.6

*6.7 CHANNEL ON-OFF DIFFERENCE

544	1425	1458	55[illegible]A	A

ESMR

DATA ORBIT	ON HRMN	OFF HRMN	INT ORBIT + STDN	H D R S
548	0143	0330	549R	A
549	0331	0525	549R	B
550	0530	0712	550R	B
551	0714	0852	551A	A
552	0852	1039	552A	B
553	1037	1224	553A	A
554	1222	1408	554A	B
555	1407	1553	555A	A
556	1552	1653	556A	B
557	1737	1918	557A	A
558	1919	2106	558A	B
559	2107	2256	559A	A

NEMS - SCR - ITPR

ON HRMN	OFF HRMN	INT ORBIT + STDN	H D R S
0143	0330	549R	A
0331	0525	549R	B
0530	0712	550R	B
0712	0852	551A	A
0852	1039	552A	B
1038	1224	553A	A
1223	1408	554A	B
1407	1553	555A	A
1552	1739	556A	B
1738	1921	557A	A
1920	2106	558A	B
2106	2254	559A	A
2258	0058	562R	P

TABLE 2-2
DATA AVAILABILITY ON-OFF TIMES
22 JANUARY 1973

THIR

DATA ORBIT	.5 + 6.7 ON HRMN	OFF HRMN	INT ORBIT + STDN	H D R S	THIR GRID CORR LALO	ASC. AND DESC. NODE TIME HRMNSS	LONG DEG
		DAYTIME THIR				ASC. NODE	
560	2355	0043	562R	B		002605	E166.0
561						021322	E139.2
562	0329	0418	562R	A		040039	E112.4
563	0517	0605	563R	A		054755	E085.5
5[illegible]4	0704	0752	564A	B		073512	E058.7
565	0851	0940	565A	A		092228	E031.9
566	1038	1127	566A	B	2N1E	110945	E005.1
567	1226	1314	567A	B		125[illegible]01	W021.7
568	1413	1502	568A	B		144418	W048.6
569	1600	1649	569A	A	1N	163135	W075.4
570	1748	1836	570A	B		181851	W102.2
571	1935	2022	571A	A		200608	W129.0
572	2122	2207	572A	B	1N	215324	W155.8
573						234041	E177.3
		NIGHTTIME THIR				DESC. NODE	
560	0043	0057	562R	B		011937	W027.4
561	0245	0329	562R	A		030654	W054.2
562	0418	0438	562R	A		045410	W081.0
562	0444	0517	563R	A			
563	0605	0627	563R	A		064127	W107.9
563	0627	0704	564A	B			
564	0752	0806	564A	B		082843	W134.7
564	0807	0851	565A	A			
565	0940	0953	565A	A		101560	[illegible]161.4
565	0951	1038*	566A	B	2S1W		
566	1127	1139	566A	B	2S1W	120316	E171.7
566	1138	1226	567A	B			
567	1314	1325	567A	B		135033	E144.9
567	1325	1413	568A	B			
568	1502	1508	568A	B		15[illegible]750	E118.1
568	1510	1600	569A	A	1S		
569	1653	1748	570A	B		172506	E091.2
570	1836	1935	571A	A		191223	E064.2
571	2023	2122	572A	B	1S	205939	E037.6
572						224656	E010.8
573	0015	0057	576R	A		003412	W016.0

*6.7 CHANNEL ON-OFF DIFFERENCE

565	0958	1038	566A	B

SMR

DATA ORBIT	ON HRMN	OFF HRMN	INT ORBIT + STDN	H D R S
560	2258	0058	562R	A
562	0245	0435	562R	B
563	0445	0628	563R	A
564	0628	0806	564A	B
565	0807	0954	565A	A
566	0951	1140	566A	B
567	1138	1326	567A	A
568	1325	1509	568A	B
569	15[illegible]9	1653	569A	A
570	1652	1836	570A	B
571	1835	2023	571A	A
572	2022	2209	572A	B

NEMS - SCR - ITPR

ON HRMN	OFF HRMN	INT ORBIT + STDN	H D R S
0245	0435	562R	A
0445	0628	563R	A
0628	0807	564A	B
0807	0954	565A	A
0951	1140	566A	B
1138	1326	567A	A
1325	150[illegible]	568A	B
1509	1653	569A	A
1653	1837	570A	B
1835	2022	571A	A
2022	2209	572A	B

TABLE 2-2
DATA AVAILABILITY ON-OFF TIMES
23 JANUARY 1973

THIR

DATA ORBIT	11.5 + 6.7 ON HRMN	OFF HRMN	INT ORBIT + STDN	H D R S	THIR GRID CORR LALO	ASC. AND DESC. NODE TIME HRMNSS	LONG DEC
DAYTIME THIR						**ASC. NODE**	
574	0057	0145	576R	A		012757	E150.5
575	0244	0333	575R	B		031514	E123.7
576	0431	0520	576R	B	1N	050231	E096.9
577	0618	0737	577A	B	2N	064947	E070.1
578	0806	0854	578A	A		083704	E043.3
579	0953	1042	579A	A		102420	E016.4
580	1140	1229	580A	A		121137	W010.4
581	1328	1416	581A	B	2N	135854	W037.2
582	1515	1604	582A	A		154610	W064.0
583	1702	1751	583A	B		173327	W090.9
584	1849	1935	584A	A		192043	W117.7
585	2037	2123	585A	B	1E	210760	W144.5
586	2224	2303*	586A	A	2N	225516	W171.3
*6.7 CHANNEL ON-OFF DIFFERENCE							
586	2224	2311	586A	A			
NIGHTTIME THIR						**DESC. NODE**	
574	0145	0207	576R	A		022129	W042.9
574	0159	0244	575R	[illegible]			
575	0333	0356	575R	B		040846	W069.7
575	0402	0431	576R	B	1S		
576	0520	0540	576R	B	1S	055602	W096.5
576	0549	0618	577A	B	2S		
577	0707	0720	577A	B	2S	074319	W123.3
577	0721	0806	578A	A			
578	0854	0908	578A	A		093035	W150.1
578	0908	0953	579A	A			
579	1042	1053	579A	A		111752	W177.0
579	1053	1140	580A	A			
580	1229	1242	580A	A		130508	E1[illegible]6.2
580	1242	1328	581A	B	2S		
581	1416	1423	581A	B	2S	145225	E129.4
581	1424	1515	582A	A			
582	1610	1702	583A	B		163941	E102.6
583	1754	1849	584A	A		182658	E075.8
584	1938	2037	585A	B	1W	201415	E049.0
585	2125	2224	586A	A	2N	220131	E022.1
586	2314	0011	589R	B		234848	W004.7

ESMR

DATA ORBIT	ON HRMN	OFF HRMN	INT ORBIT + STDN	H D R S
574	0014	0208	576R	A
575	0159	0357	575R	B
576	0402	0541	576R	B
577	0546	0721	577A	B
578	0721	0910	578A	A
579	0908	1055	579A	B
580	1056	1243	580A	A
581	1242	1424	581A	B
582	1424	1610	582A	A
583	1610	1755	583A	B
584	1754	1936	584A	A
585	1938	2124	585A	B
586	2125	2312	586A	A

NEMS - SCR - ITPR

ON HRMN	OFF HRMN	INT ORBIT + STDN	H D R S
0014	0207	576R	A
0159	0356	575R	B
0402	0541	576R	B
0546	0721	577A	B
0721	0909	578A	A
0908	1054	579A	B
1053	1243	580A	A
1242	1424	581A	B
1424	1610	582A	A
1610	1754	583A	B
1754	1936	584A	A
1935	2123	585A	B
2125	2312	586A	A
2313	0113	589R	A

TABLE 2-2
DATA AVAILABILITY ON-OFF TIMES
24 JANUARY 1973

THIR

DATA ORBIT	11.5 + 6.7 ON HRMN	OFF HRMN	INT ORBIT + STDN	H D R S	THIR GRID CORR LALO	ASC. AND DESC. NODE TIME HRMNSS	LONG DEG
DAYTIME THIR						**ASC. NODE**	
587	0011	0100	589R	B		004233	E161.9
588						022950	E135.1
589	0346	0435	589R	A	2N	041706	E108.2
590	0533	0622	590R	A	1N1E	060423	E081.4
591	0720	0809	591A	B		075139	E054.6
592	0908	0956	592A	A		093856	E027.8
593	1055	1144	593A	B	1E	112612	E001.0
594	1242	1331	594A	A		131329	W025.9
595	1430	1518	595A	B	1N	150046	W052.7
596	1617	1705	596A	A		16480[illegible]	W079.5
597	1804	1850	597A	B		183519	W106.3
598	1951	2038	598A	A		202235	W133.1
599	2139	2225	599A	B		220952	W160.0
600						235708	E173.2
NIGHTTIME THIR						**DESC. NODE**	
587	0100	0113	589R	B		013604	W031.5
588	0302	0346	589R	A	2S	032321	W058.3
589	0435	0454	589R	A	2S	051037	W085.1
589	0500	0533	590R	A	1S1W		
590	0622	0643	590R	A	1S1W	065754	W112.0
590	0643	0720	591A	B			
591	0809	0825	591A	B		084511	W138.8
591	0823	0908	592A	A			
592	0956	1012	592A	A		103227	W165.6
592	1012	1055	593A	B	1W		
593	1144	1157	593A	B	1W	121944	E167.6
593	1154	1242	594A	A			
594	1331	1342	594A	A		140700	E140.8
594	1340	1430*	595A	B	1S		
595	1518	1525	595A	B	1S	155417	E113.9
595	1526	1617	596A	A			
596	1709	1804	597A	B		174133	E087.1
597	1853	1951	598A	A		1928[illegible]0	E060.3
598	2040	2139	599A	B		211607	E033.5
599						230323	E006.7
600	0029	0113	602R	A		005040	W020.2

*6.7 CHANNEL ON-OFF DIFFERENCE

594	1400	1430	595A	B

ESMR

DATA ORBIT	ON HRMN	OFF HRMN	INT ORBIT + STDN	H D R S
587	2314	0114	589R	B
589	0302	0455	589R	A
590	0500	0641	590R	A
591	0642	0825	591A	B
592	0823	1013	592A	A
593	1012	[illegible]59	593A	B
594	1155	1342	594A	A
595	134[illegible]	1525	595A	B
596	1526	1709	596A	A
597	1709	1851	597A	B
598	1853	2039	598A	A
599	2040	22[illegible]	599A	B

NEMS - SCR - ITPR

ON HRMN	OFF HRMN	INT ORBIT + STDN	H D R S
0302	0454	589R	B
0500	0643	590R	A
0643	0826	591A	B
0823	1013	592A	A
1012	1158	593A	B
1154	1343	594A	A
1340	1525	595A	B
1526	1709	596A	A
1709	1851	597A	B
1851	2039	598A	A
2037	2226	599A	B

TABLE 2-2
DATA AVAILABILITY ON-OFF TIMES
25 JANUARY 1973

THIR

DATA ORBIT	11.5 + 6.7 ON HRMN	11.5 + 6.7 OFF HRMN	INT ORBIT + STDN	HDRS	THIR GRID CORR LALO	ASC. AND DESC. NODE TIME HRMNSS	ASC. AND DESC. NODE LONG DEG
DAYTIME THIR						ASC. NODE	
601	0113	0202	602R	A		014425	E146.4
60[illegible]	0300	0349	602R	B		033142	E119.6
603	0448	0536	603R	B		051858	E092.8
604	0635	0724	604A	A	3N	070615	E066.0
605	0822	0911	605A	B		085331	E039.1
606	1010	1058	606A	A		104048	E012.3
607	1157	1246	607A	B		122804	W014.5
608	1344	1433	608A	A		141521	W041.3
609	1531	1620	609A	B		160238	W06[illegible]
610	1719	1807	610A	A	1N	174954	W095.0
611	1906	1952	611A	B		193711	W121.8
612	2053	2142	612A	A		212427	W148.6
613	2241	2329	616R	B		23114[illegible]	W175.4
NIGHTTIME THIR						DESC. NODE	
601	0202	0221	602R	A		023756	W047.0
601	0216	0300	602R	B			
602	0349	0411	602R	B		0425[illegible]3	W073.8
602	0417	0448	603R	B			
603	0536	0557	603R	B		061229	W100.6
603	0559	0635	604A	A	3S		
604	0724	0739	604A	A	3S	075946	W127.4
604	0739	0822	605A	B			
605	0911	0925	605A	B		094702	W154.3
605	0926	1010	606A	A			
606	1058	1110	606A	A		113419	E178.9
606	1111	1157	607A	B			
607	1246	1255	607A	B		132136	E152.1
607	1256	1344	608A	A			
608	1[illegible]33	1439	608A	A		150852	E125.3
608	1439	1531	609A	B			
609	1624	1719	610A	A	1S	165609	E098.5
610	1807	1906	611A	B		184325	E071.7
611	1955	2053	612A	A		203042	E044.8
612	2144	2241	616R	B		221758	E018.0
613	2329	2343	616R	B		000515	W008.8

ESMR

DATA ORBIT	ON HRMN	OFF HRMN	INT ORBIT + STDN	HDRS
601	0029	0221	603R	A
602	0216	0412	6[illegible]2R	B
603	0417	055[illegible]	603R	B
[illegible]	[illegible]559	0[illegible]40	604A	A
[illegible]5	0739	0926	605A	B
[illegible]06	0926	1111	606A	A
607	1110	1256	607A	B
608	1256	1438	608A	A
609	1440	1625	609A	B
610	16[illegible]4	1809	610A	A
611	1[illegible]10	1953	611A	B
612	1[illegible]54	2139	612A	A
613	2[illegible]	23[illegible]4	616R	B

NEMS - SCR - ITPR

ON HRMN	OFF HRMN	INT ORBIT + STDN	HDRS
002[illegible]	0221	602R	A
0215	0411	602R	B
0417	0558	603R	B
0558	0739	604A	A
0739	0926	605A	B
0926	1111	606A	A
1110	1256	607A	B
1256	1438	608A	A
1439	1625	609A	B
1623	1809	610A	A
1807	1953	611A	B
1953	2[illegible]39	612A	A
2143	2343	616R	B

TABLE 2-2
DATA AVAILABILITY ON-OFF TIMES
26 JANUARY 1973

THIR

DATA ORBIT	11.5 + 6.7 ON HRMN	OFF HRMN	INT ORBIT + STDN	H D R S	THIR GRID CORR LALO	ASC. AND DESC. NODE TIME HRMNSS	LONG DEG
	DAYTIME THIR					ASC. NODE	
614						005900	E157.8
615						024617	E130.9
616	0402	0451	616R	A		043334	E104.1
617	0550	0638	617R	A	1N	062056	E077.3
618	0737	0826	618A	B	1W	080807	E050.5
619	0924	1013	619A	A		095523	E023.7
620	1112	1200	620A	B		114240	W003.2
621	1259	1347	621A	A		132957	W030.0
622	1446	1535	622A	B	2N	151713	W056.9
623	1633	1722	623A	B		170430	W083.6
624	1821	1906	624A	B		185146	W110.4
625	2008	2054	625A	A		203903	W137.3
626	2155	2244	626A	B		222619	W164.1
	NIGHTTIME THIR					DESC. NODE	
614						015232	W035.6
615	0319	0402	616R	A		033948	W062.4
616	0451	0511	616R	A		052705	W089.3
616	0517	0558	617R	A	1S		
617	0638	0659	617R	A	1S	071421	W116.1
617	0700	0737	618A	B	1E		
618	0826	0839	618A	B	1E	090138	W142.9
618	0839	0924	619A	A			
619	1013	1026	619A	A		104854	W169.7
619	1026	1112	620A	B			
620	1200	1211	620A	B		123611	E163.5
620	1213	1259	621A	A			
621	1347	1358	621A	A		142328	E136.7
621	1356	1446	622A	B	2S		
622	1535	1541	622A	B	2S	161044	E109.8
622	1541	1633	623A	B			
623	1723	1821	624A	B		175801	E083.0
624	1909	2008	625A	A		194517	E056.2
625	2057	2155	626A	B		213[illegible]4	E029.4
626						231950	E002.6

ESMR

DATA ORBIT	ON HRMN	OFF HRMN	INT ORBIT + STDN	H D R S
616	0319	0512	616R	A
617	0517	0700	617R	A
618	0700	0840	618A	B
619	0840	1028	619A	A
620	1026	1212	620A	B
621	1212	1359	621A	A
622	1356	1542	622A	B
623	1541	1724	623A	A
624	1724	1907	624A	B
625	1910	2055	625A	A
626	2055	2245	626A	B

NEMS - SCR - ITPR

ON	OFF	INT ORBIT + STDN	H D R S
0319	0512	616R	A
0517	0700	617R	A
0659	0840	618A	B
0839	1027	619A	A
1026	1212	620A	B
1212	1359	621A	A
1356	1542	622A	B
1541	1724	623A	A
1723	1907	624A	B
1937	2055	625A	A
2054	2245	626A	B

TABLE 2-2
DATA AVAILABILITY ON-OFF TIMES
27 JANUARY 1973

THIR							
DATA ORBIT	11.5 + 6.7 ON HRMN	OFF HRMN	INT ORBIT + STDN	H D R S	THIR GRID CORR LALO	ASC. AND DESC. NODE TIME HRMNSS	LONG DEG
	DAYTIME THIR					ASC. NODE	
627						001336	E169.1
628	0130	0218	629R	A	1N	020052	E142.3
629	0317	0406	629R	B		034009	E115.5
630	0504	0553	630R	B		053526	E088.7
631	0652	0740	631A	A		072242	E061.8
632	0839	0928	632A	B		090959	E035.0
633	1026	1115	633A	A		105715	E008.2
634	1214	1302	634A	B	2N	124432	W018.6
635	1401	1450	635A	A		143148	W045.4
636	1548	1637	636A	B		161905	W072.3
637	1735	1824	637A	A		180622	W099.1
638	1923	2009*	638A	B		195338	W125.9
639	2110	2157	639A	A		214055	W152.7
640	2257	2346	643R	B		232011	W179.5
*6.7 CHANNEL ON-OFF DIFFERENCE							
638	1923	2004	638A	B			
	NIGHTTIME THIR					DESC. NODE	
627	0044	0130	629R	A	1S	010707	W024.3
628	0218	0226	629R	A	1S	025424	W051.1
628	0233	0317	629R	S			
629	0406	0427	629R	B		044140	W077.9
629	0433	0504	630R	B			
630	0553	0614	630R	B		062857	W104.7
630	0613	0652	631A	A			
631	0740	0754	631A			081613	W131.5
631	0754	0839	632A	B			
632	0928	0939	632A	B		100330	W158.4
632	0940	1026	633A	A			
633	1115	1127	633A	A		115046	E174.8
633	1128	1214	634A	B	2S		
634	1302	131[illegible]	634A	B	2S	133803	E148.0
634	1313	1401	635A	A			
635	1450	1457	635A	A		152519	E121.2
635	1458	1548	636A	B			
636	1641	1735	637A	A		171236	E094.4
637	1826	1923	638	B		185953	E067.5
638	2011	2110	639A	A		204709	E040.7
639	2159	2[illegible]57	643R	B		223426	E013.9
640	2346	2358	643R	B		002142	W012.9

ESMR				
DATA ORBIT	ON HRMN	OFF HRMN	INT ORBIT + STDN	H D R S
628	0045	0237	629R	A
629	0233	0427	629R	B
630	0433	0615	630R	B
631	0614	0755	631A	A
632	0755	0941	632A	B
633	0940	1128	633A	A
634	1127	1312	634A	B
635	1312	1457	635A	A
636	1450	1642	636A	B
637	1640	1825	637A	A
638	1826	2010	638A	B
639	2011	2158	639A	A
640	2159	0000	643R	B

NEMS - SCR - ITPR			
0045	0237	629R	B
0233	0427	629R	A
0433	0615	630R	B
0614	0755	631A	A
0754	0941	632A	B
0940	1128	633A	A
1127	1312	634A	B
1312	1458	635A	A
1453	1642	636A	B
1640	1825	637A	A
1826	2010	638A	B
2011	2158	639A	A
2158	2359	643R	B

TABLE 2-2
DATA AVAILABILITY ON-OFF TIMES
28 JANUARY 1973

THIR

DATA ORBIT	11.5 + 6.7 ON HRMN	OFF HRMN	INT ORBIT + STDN	H D R S	THIR GRID CORR LALO	ASC. AND DESC. NODE HHMMSS	LONG DEC
	DAYTIME THIR					ASC. NODE	
641						011528	E15[illegible].7
642	0232	032[illegible]	642R	A		030244	E126.8
643	0419	0508	643R	A		045001	E100.0
644	0606	0655	644R	A		063718	E073.2
645	0754	0842	645A	B		082434	E046.4
646	0941	1030	646A	A		101151	E019.6
647	1[illegible]28	1217	647A	B		115907	W007.3
648	1316	140[illegible]	648A	A		134624	W034.1
649	1503	1551	649A	B		153340	E060.9
650	1650	1730	650A	A		172057	W087.7
651	1837	1924	651A	A		190814	W114.5
652	2025	2112	652A	A		205530	W141.4
653	2212	2259	653A	B		224247	W168.2
	NIGHTTIME THIR					DESC. NODE	
641	0147	0232	642R	A		02[illegible]	W0[illegible].7
642	0321	0343	642R	A		035616	W066.6
642	0349	0419	643R	A			
643	0508	0526	643R	A		054332	W093.4
643	0533	0606	644R	A			
644	0655	0714	644R	A		073049	W120.2
644	0715	0754	645A	B			
645	0842	0855	645A	B		091805	W147.0
645	0856	0941	646A	A			
646	1030	1041	646A	A		110522	W173.8
646	1041	1128	647A	B			
647	1217	1228	647A	B		125238	E159.4
647	1228	1316	648A	A			
648	1404	1412	648A	A		143955	E132.5
648	1413	1503	649A	B			
649	1551	1556	649A	B		162711	E105.7
649	1556	1650	650A	A			
650	1739	1837	651A	A		181428	E078.9
651	1926	2025	652A	A		200145	E[illegible]52.1
652	2113	2212	653A	B		214901	E025.3
653						233618	W001.6

ESMR

DATA ORBIT	HRMN	HRMN	INT ORBIT + STDN	H D R S
642	0147	0343	642R	A
643	0349	0527	643R	A
644	0533	0715	644R	A
645	0716	0857	645A	B
646	0856	1042	646A	A
647	1043	1228	647A	B
648	1227	1413	648A	A
649	1413	1557	649A	B
650	1557	1739	650A	A
651	1739	1925	651A	B
652	1925	2113	652A	A
653	2111	2259	653A	B

NEMS - SCR - ITPR

HRMN	HRMN	INT ORBIT + STDN	H D R S
0147	0343	642R	A
0349	0527	643R	A
0533	0715	644R	A
0715	0857	645A	B
0856	1042	646A	A
1041	1228	6[illegible]7A	B
1227	1413	648A	A
1412	1557	649A	B
1556	1739	650A	A
1730	1925	651A	B
1924	2113	652A	A
2111	2259	653A	B

TABLE 2-2
DATA AVAILABILITY ON-OFF TIMES
29 JANUARY 1973

THIR

DATA ORBIT	11.5 + 6.7 ON HRMN	OFF HRMN	INT ORBIT + STDN	H D R S	THIR GRID CORR LALO	ASC. AND DESC. NODE TIME HRMNSS	LONG DEG
	DAYTIME THIR					ASC. NODE	
654						003003	E165.9
655	0147	0235	656R	A		021728	E138.2
656	0334	0422	656R	B		040436	E111.4
657	0521	0610	657R	B		055153	E084.5
658	0708	0757	658A	A		073910	E057.7
659	0856	0944	659A	B	1N	092626	E030.9
660	1043	1132	660A	A		111343	E004.1
661	1230	1319	661A	B		130059	W022.7
662	1417	1506	662A	A		144016	W049.6
663	1605	1653	663A	A		63532	W076.4
664	1752	1840	664A	A		162249	W103.2
665	1939	2026	665A	B		201006	W130.8
666	2127	2213	666A	A		215722	W156.8
667	2314	0003	670R	B	1N	234439	E176.4
	NIGHTTIME THIR					DESC. NODE	
654	0102	0147	656R	A		012334	W028.4
655	0235	0253	656R	A		031051	W055.2
655	0251	0334	656R	?			
656	0422	0443	656R	B		045807	W082.0
656	0449	0521	657R	B			
657	0610	0632	657R	B		064524	W108.8
657	0630	0700	658A	A			
658	0757	0810	658A	A		083241	W135.7
658	0810	0856	659A	B	1S		
659	0944	0956	659A	B	1S	101957	W162.5
659	0956	1043	660A	A			
660	1132	1142	660A	A		120714	E170.7
660	1141	1230	661A	B			
661	1319	1328	661A	B		135430	E143.9
661	1328	1417	662A	A			
662	15[illegible]5	1512	662A	X		154147	E117.1
662	1512	1605	663A	A			
663	1656	1752	664A	A		172903	E090.3
664	1841	1939	665A	B		191620	E063.4
665	2028	2127	666A	A		210336	E036.6
666	2215	2314	670R	B	1S	225953	E009.8
667	0003	0015	670R	B	1S	003919	W017.0

ESMR

DATA ORBIT	ON HRMN	OFF HRMN	INT ORBIT + STDN	H D R S
655	0102	0253	656R	A
656	0251	0444	656R	B
657	0449	0632	657R	B
658	0630	0812	658A	A
659	0811	0957	659A	B
660	0957	1143	660A	A
661	1143	1328	661A	B
662	1328	1513	662A	A
663	1512	1657	663A	B
664	1656	1840	664A	A
665	1841	1958	665A	B
666	2027	2215	666A	A
667	2214	0817	670R	B

NEMS - SCR - ITPR

ON HRMN	OFF HRMN	INT ORBIT + STDN	H D R S
0102	0253	656R	A
0250	0444	656R	B
0449	0632	657R	B
0630	0811	658A	A
0810	0957	659A	B
0956	1143	660A	A
1141	1328	661A	B
1328	1513	662A	A
1512	1656	663A	B
1656	1840	664A	A
1839	2027	665A	B
2026	2214	666A	A
2214	0016	670R	B

TABLE 2-2
DATA AVAILABILITY ON-OFF TIMES
30 JANUARY 1973

THIR

DATA ORBIT	11.5 + 6.7 ON HRMN	OFF HRMN	INT ORBIT + STDN	HDRS	THIR GRID CORR LALO	ASC. AND DESC. NODE TIME HRMNSS	LONG DEG
	DAYTIME THIR					ASC. NODE	
668						013155	E149.5
669	0248	0337	669R	A		031912	E122.7
670	0436	0524	670R	A	1E	050628	E095.9
671	0623	0712	671A	A		065345	E069.1
672						084102	E042.3
673	0958	1046	673A	A		102818	E015.4
674	1145	1234	674A	B		121535	W011.4
675	1332	1421	675A	A		140251	W038.2
676	1519	1608	676A	B		155008	W065.[illegible]
677	1707	1755	677A	A		173724	W091.8
678	1854	1938	678A	B		192441	W118.7
679	2041	2129	679A	A		211158	W145.5
680	2229	2317	680A	B		225914	W172.3
	NIGHTTIME THIR					DESC. NODE	
668	0203	0248	669R	A		022526	W043.8
669	0337	0400	669R	A		041243	W070.7
669	0407	0436	670R	A	1W		
670	0524	0543	670R	A	1W	055959	W097.5
670	0549	0623	671A	A			
671	0712	0725	671A	A		074716	W124.3
672	0912	0958	673A	A		093432	W151.1
673	1046	1057	673A	A		112149	W177.9
673	1057	1145	674A	B			
674	1234	1243	674A	B		130906	E155.2
674	1243	1332	675A	A			
675	1421	1429	675A	A		145622	E128.4
675	1428	1519	676A	B			
676	1608	1613	676A	B		164339	E101.6
676	1612	1707	677A	A			
677	1755	1854	678A	B		183055	E074.8
678	1943	2041	679A	A		201812	E048.0
679	2130	2229	680A	B		220528	E021.1
680						235245	W005.7

ESMR

DATA ORBIT	ON HRMN	OFF HRMN	INT ORBIT + STDN	HDRS
669	0203	0401	669R	A
670	0407	0543	670R	A
671	0549	0726	671A	A
672	0726	0912	672A	B
673	0912	0958	673A	A
674	1057	1244	674A	B
675	1243	1430	675A	A
676	1428	1614	676A	B
677	1612	1756	677A	A
678	1755	1938	678A	B
679	1940	2131	679A	A
680	2128	2318	680A	B

NEMS - SCR - ITPR

ON	OFF	INT ORBIT + STDN	HDRS
0203	0401	669R	A
0407	0543	670R	A
0549	0726	671A	A
0726	0913	672A	B
0912	1058	673A	A
1057	1244	674A	B
1243	1430	675A	A
1428	1615	676A	B
1612	1756	677A	A
1754	1938	678A	B
1939	2131	679A	A
2128	2317	680A	B

TABLE 2-2
DATA AVAILABILITY ON-OFF TIMES
31 JANUARY 1973

THIR

DATA ORBIT	11.5 + 6.7 ON HRMN	OFF HRMN	INT ORBIT + STDN	HDRS	THIR GRID CORR LALO	ASC. AND DESC. NODE TIME HRMNSS	LONG DEG
	DAYTIME THIR					ASC. NODE	
681						004631	E160.9
682	0203	0252	683R	A	2N	023347	E134.1
683	0350	0439	683R	B		042104	E107.3
684	0538	0626	684R	B		060821	E080.4
685	0725	0814	685A	A		075537	E053.6
686	0912	1001	686A	B		094254	E026.8
687	1100	1148	687A	A		113010	W000.0
688	1247	1335	688A	B		131727	W026.9
689	1434	1523	689A	A		150443	W053.7
690	1621	1710	690A	B		165160	W080.5
691	1809	1855	691A	A		183915	W107.3
692	1956	2041	692A	B	[illegible]N	202633	W134.1
693	2143	2232	693A	A		221350	W160.9
	NIGHTTIME THIR					DESC. NODE	
681	0118	0203	683R	A	2S	014002	W032.5
682	0252	0307	683R	A	2S	032718	W059.3
682	0304	0350	683R	B			
683	0439	0458	683R	B		051435	W086.1
683	0505	0538	684R	B			
684	0626	0646	664R	B		070151	W113.0
684	0646	0725	685A	A			
685	0814	0825	685A	A		084908	W139.8
685	0833	0912*	686A	B			
686	1001	1012	686A	B		103624	W166.6
686	1012	1100	687A	A			
687	1148	1159	687A	A		122341	E166.6
687	1158	1247	688A	B			
688	1335	1344	688A	B		141057	E139.8
688	1344	1434	689A	A			
689	1527	1621	690A	B		155814	E113.0
690	1711	1809	691A	A		174531	E086.1
691	1857	1956	692A	B	1S	193247	E059.3
692	2045	2143	693A	A		212004	E032.5
693	2233	2330	696R	B		230720	E005.7

*6.7 CHANNEL ON-OFF DIFFERENCE

685	0826	0912	686A	B

ESMR

DATA ORBIT	ON HRMN	OFF HRMN	INT ORBIT + STDN	HDRS
682	0116	0307	683R	A
683	0304	0459	683R	B
684	0505	0647	684R	B
685	0646	0826	685A	A
686	0827	1012	686A	B
687	1014	1159	687A	A
688	1158	1345	688A	B
689	1344	1528	689A	A
690	1528	1709	690A	B
691	1712	1856	691A	A
692	1857	2042	692A	B
693	2043	2230	693A	A

NEMS - SCR - ITPR

ON HRMN	OFF HRMN	INT ORBIT + STDN	HDRS
0118	0307	683R	A
0305	0459	683R	B
0505	0647	684R	B
0646	0826	685A	A
0826	1013	686A	B
1011	1159	687A	A
1158	1345	688A	B
1343	1528	689A	A
1527	1709	690A	B
1711	1855	691A	A
1855	2042	692A	B
2042	2230	693A	A
2233	0031	696R	A

SECTION 3

ELECTRICALLY SCANNING MICROWAVE RADIOMETER DISPLAYS

One ESMR display per day has been selected for presentation in this section. All ESMR coverage times are listed in the Data Availability On-Off Times (Table 2-2). Each display contains the following items:

Nimbus 5 ESMR

This identifies the satellite (Nimbus 5) and the experiment (ESMR).

Date

This identifies the Greenwich day, month, and year the data is recorded.

Data Orbit

This data orbit number identifies only the last data orbit on each display. Usually parts of two data orbits are on the same display, since all data acquired during each satellite interrogation is presented on one 4 x 5-inch negative. In general, nighttime data is on the left and daytime data is on the right.

Program

No Program number is identified on these displays. Its intended use was to identify the appropriate table which would list the temperature interval for each gray level in the gray scale. Only two programs have been used and they are listed in Table 3-1.

Gray Scale

A single 11-step gray scale serves to define ESMR brightness temperatures in all three swaths, by the assignment of a different brightness temperature range to each step for each swath. Table 3-1 defines the two temperature-versus-gray-scale programs used during this catalog period.

Image Swaths (1, 2, 3)

A set of three swaths, labeled 1, 2, and 3, separates the same recorded data into three temperature intervals (defined in Table 3-1).

Table 3-1

ESMR GRAY SCALE STEPS VERSUS BRIGHTNESS TEMPERATURE FOR EACH OF THE THREE ESMR SWATHS IN THE PICTORIAL DISPLAYS
(Temperatures in °K)

		Program 1 Orbit 104 through 502			Program 2 Orbit 503 through 693		
	Swath	1	2	3	1	2	3
Gray Scale Number (black)	1	> 200	> 259	> 280	> 210	> 266	> 290
	2	190-200	256-259	277-280	202-210	258-266	286-290
	3	180-190	253-256	274-277	194-202	250-258	282-286
	4	170-180	250-253	271-274	186-194	242-250	278-282
	5	160-170	240-250	268-271	178-186	234-242	274-278
	6	150-160	230-240	265-268	170-178	226-234	270-274
	7	140-150	220-230	262-265	162-170	218-226	266-270
	8	130-140	210-220	259-262	154-162	210-218	262-266
	9	120-130	200-210	256-259	146-154	202-210	258-262
	10	110-120	190-200	253-256	138-146	194-202	254-258
(white)	11	< 110	< 190	< 253	< 138	< 194	< 254

The right set of three swaths is a continuation of the left set and is offset because of the limitations of the 4 x 5-inch film format. The three-swath presentation is used because it shortens the temperature ranges spanned by each step of the gray scale, and, therefore, permits discrimination of various meteorological and terrestrial phenomena.

Significant in swath 1 are the areas of atmospheric moisture and rainfall over oceans. Swath 2 brightness temperature range discriminates between new and multi-year ice and, over oceans, shows only rainfall areas. The high brightness temperatures of swath 3 outline some land areas of high soil moisture content or snow cover, but oceans lose almost all their temperature contrasts.

Time Code Index

The Time Code Index, in hours and minutes (GMT), is adjacent to the gray scale. The top number in each set is for the left group of three swaths; the bottom number in each set is for the right group of three swaths. Time bars are spaced at five-minute intervals. The same time bars are used for the left and right swaths. The top or bottom time code index determines the time for each time bar.

Grids

Two grids, labeled GRID L and GRID R, identify the geographic coordinates for the imagery of the left (L) and the right (R) set of swaths, respectively. Latitude lines are spaced at 10-degree intervals. Longitude lines are spaced at 10-degree intervals to 60 degrees north and south of the equator, and at 20-degree intervals from 60 to 80 degrees north and south. The equator (EQ), North Pole (NP), and South Pole, (SP) are labeled, as well as longitude values at the equator, 30, and 60 degrees north and south of the equator.

Swath Display Program

The antenna gain function is different at each beam position. Thus, to present a uniform surface temperature as the same shade of gray across a scan track requires that the output voltage at each antenna position be adjusted for its beam position and voltage. If the corrections are not precise, vertical bands will be evident in the ESMR pictorial displays.

Three different sets of calibration constants (Display Format Programs) were used during the first two months of operation to eliminate these vertical bands. Figures 3-1, 3-2, and 3-3 show the vertical banding produced by each. The display Program used for Figure 3-3 shows that almost all temperature variations due to antenna beam positions have been eliminated.

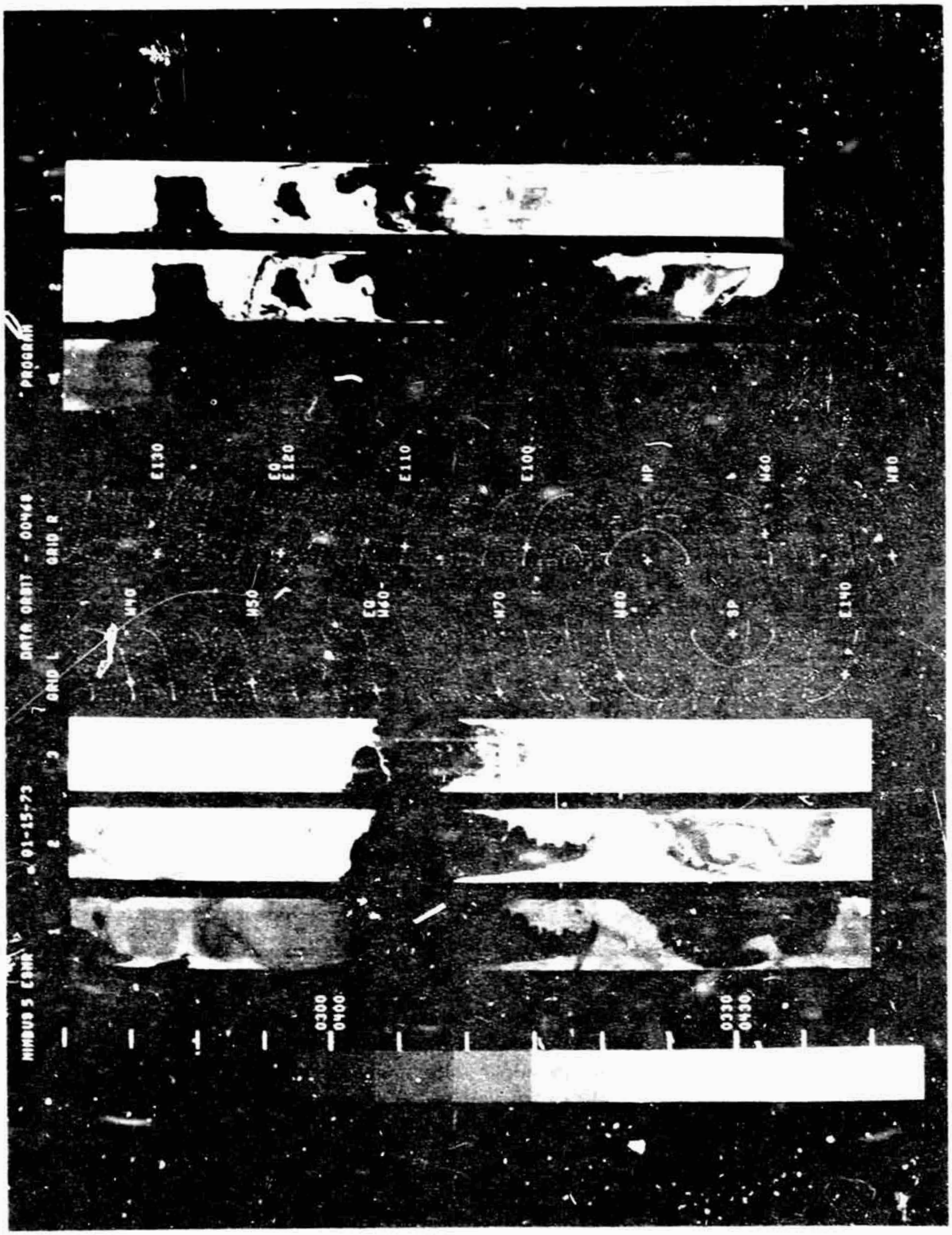


Figure 3-1. Vertical Banding Produced on ESMR Images with Program 1 Display Format (Used on Orbits 104 through 502).

Figure 3-2. Vertical Banding Produced on ESMR Images with Program 2 Display Format (Used on Orbits 503 through 566).

Figure 3-3. Vertical Banding Produced on ESMR Image with Program 4 Display Format (Used on Orbits 567 through 693).

With display Program 1, which uses prelaunch calibration constants, the digital brightness temperature values have about ±20°K accuracy. With a change to postlaunch calibration constants, Programs 2 and 4 produce about ±2° to 5°K temperature value accuracies. Of course, with Programs 2 and 4, the displayed temperature values are accurate only within the limits of the temperature range of each step of the gray scales as defined in Table 3-1. Table 3-2 shows which display format program and which gray scale step versus brightness temperature program was used on each orbit.

A description of the ESMR experiment may be found in The Nimbus 5 User's Guide, Section 4, and instructions for ordering the data, both pictorial and digital, are in Section 1.7 of that Guide.

Table 3-2

COVERAGE INTERVALS FOR EACH ESMR DISPLAY FORMAT AND GRAY SCALE BRIGHTNESS TEMPERATURE PROGRAM

Date	Orbit	Program Format Display	Gray Scale Brightness Temperature Program
19 Dec - 17 Jan	104-502	1	1
17 Jan - 22 Jan	503-566*	2	2
22 Jan - 31 Jan	567-693	4	2

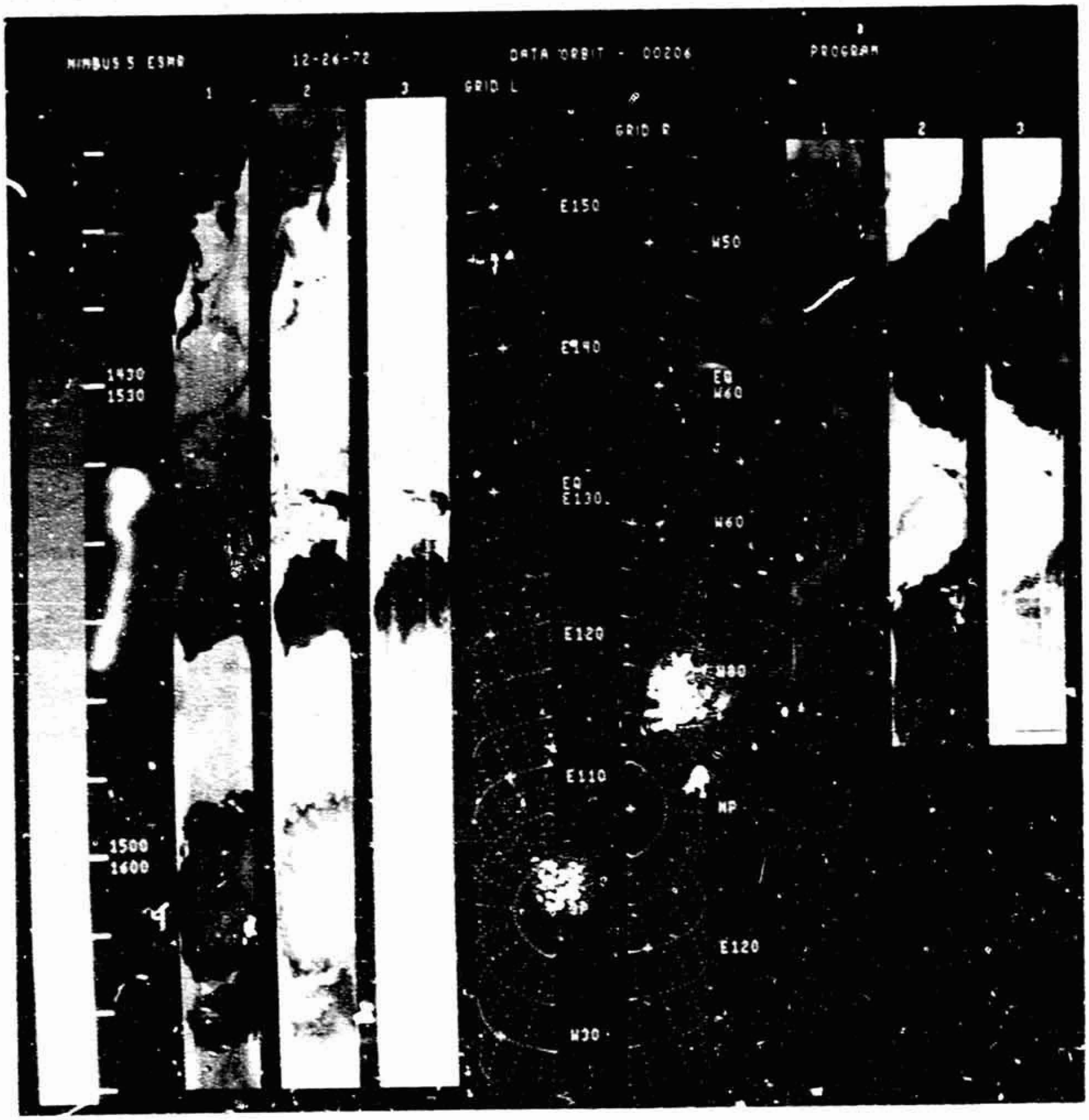
*550 & 551, Display Format 4


DATA ORBIT - 00106
PROGRAM
GRID R
W50
E110
W60
EQ
E110
E100
W80
E80
W90
NP
E130
W90


NIMBUS 5 ESMR
DATA ORBIT - 00119
PROGRAM
GRID
E130
W50
E120
W60
E110
W70
E100
W80
NP
SP
E140
W80

NIMBUS 5 ESMR
12-21-72
DATA ORBIT
GRID L
GRID R
E120
W80
E110
EQ
W90
EQ
E100
W90
E90
W110
E80
NP
SP
E90
1630
1730
1700
1800


NIMBUS 5 ESMR


NIMBUS 5 ESMR
12-26-72
DATA ORBIT - 00206
PROGRAM
1
2
3
GRID L
GRID R
1
2
3
E150
W50
1430
1530
EQ
W60
EQ
E130
W60
E120
W80
E110
NP
1500
1600
SP
E120
W30

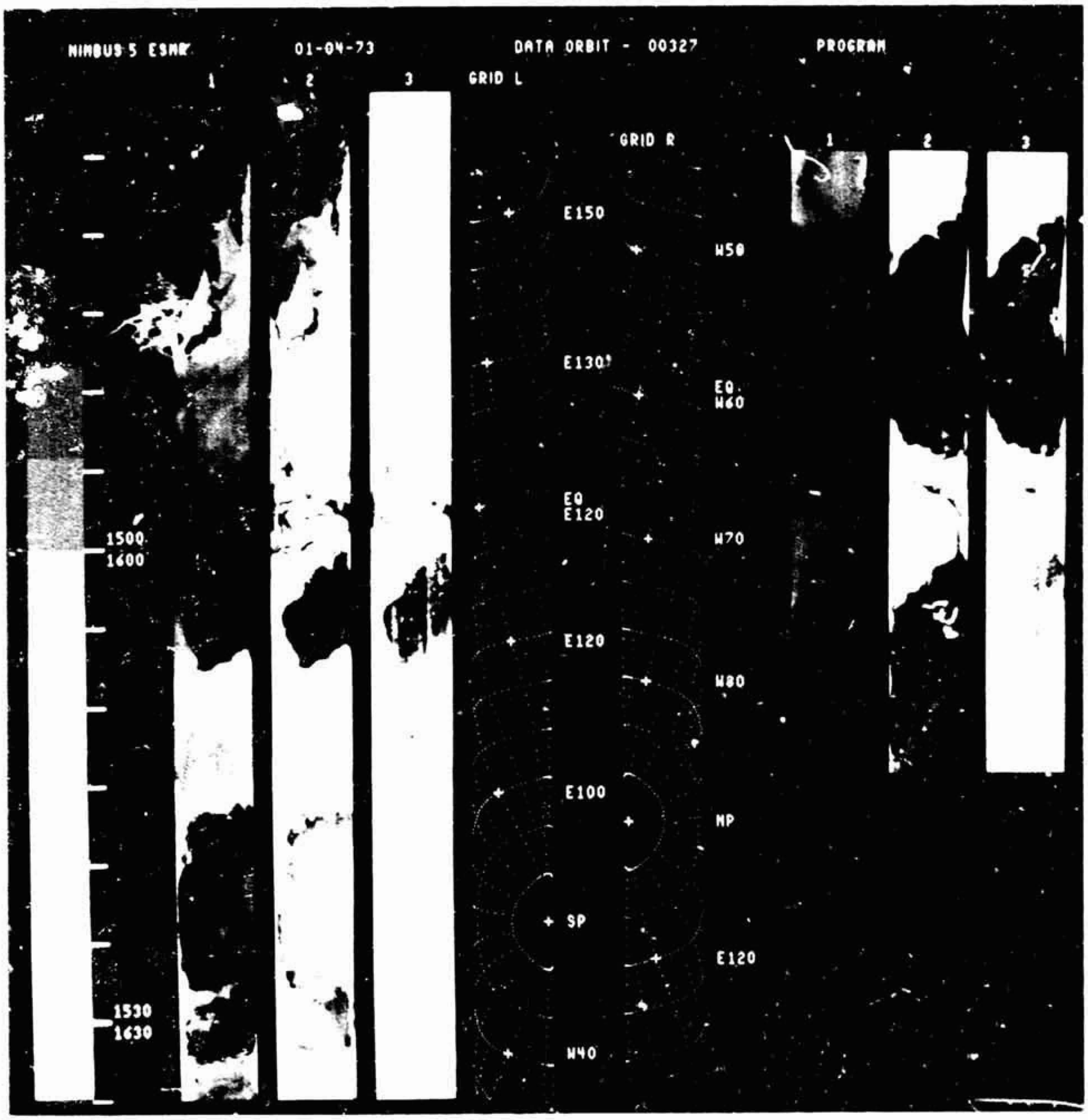

DATA ORBIT
PROGRAM
GRID L
GRID R
W120
E40
EQ
E30
W150
E10
W160
NP
SP
W140
E60
0800
0900
1000


NIMBUS 5 ESMR
PROGRAM
1430
1500
1600
E150
E120
W80
SP
W40


NIMBUS 5 ESMR
1000
1100
1030
1130
E20
E170
NP
SP
E40
W180


NIMBUS 5 ESMR
PROGRAM
GRID
SP
NP
W140
2130
2230
E40
W160
E30
EQ
W160
EQ
E20
W170
E10
2200
2300
E170
E00
NP

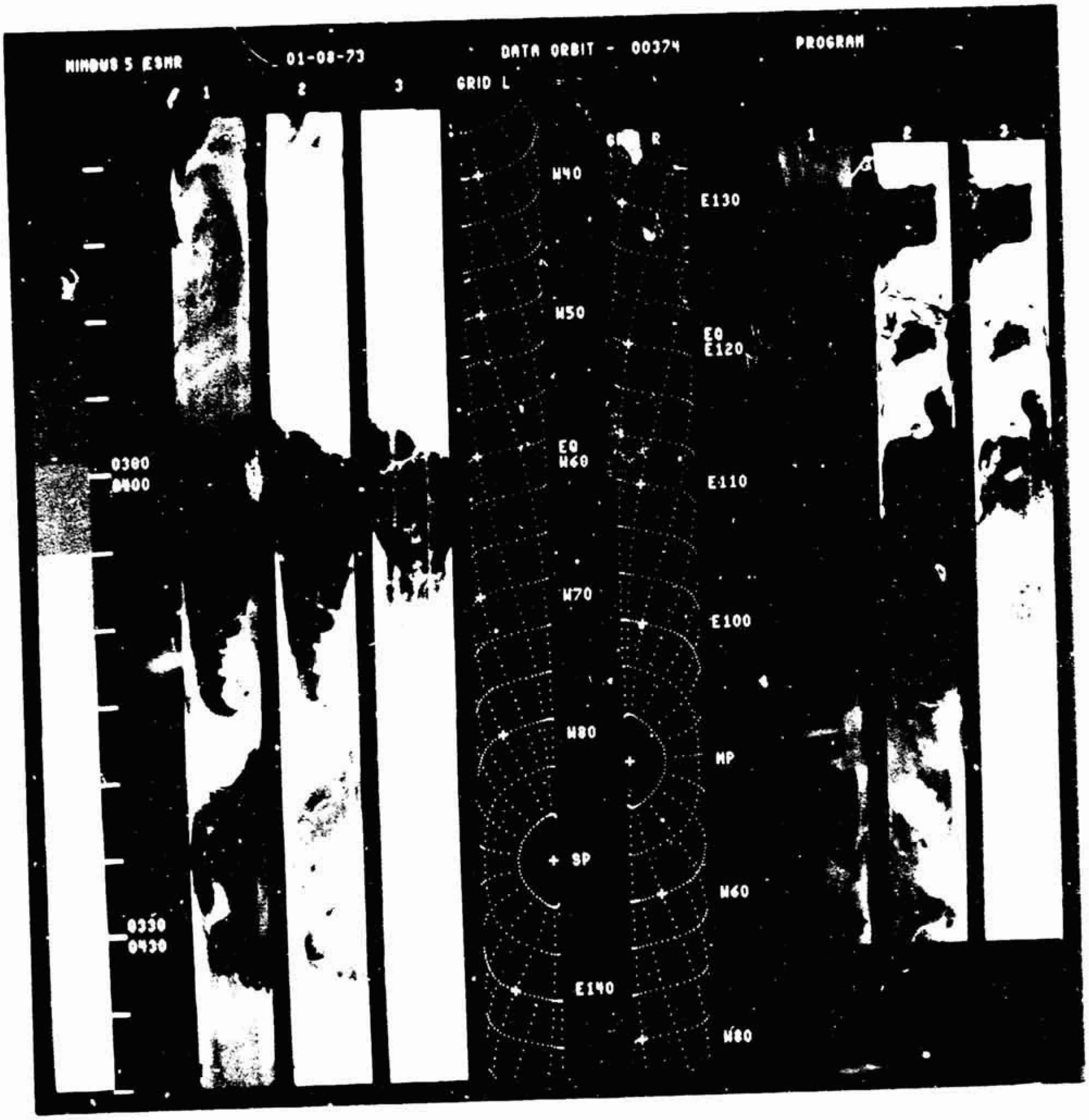

NIMBUS 5 ESMR
PROGRAM
W150
E20
W160
E10
E00
W180
W10
E170
NP
SP


NIMBUS 5 ESMR
01-04-73
DATA ORBIT - 00327
PROGRAM
1
2
3
GRID L
GRID R
1
2
3
E150
W50
E130
EQ
W60
EQ
E120
W70
1500
1600
E120
W80
E100
NP
SP
E120
1530
1630
W40

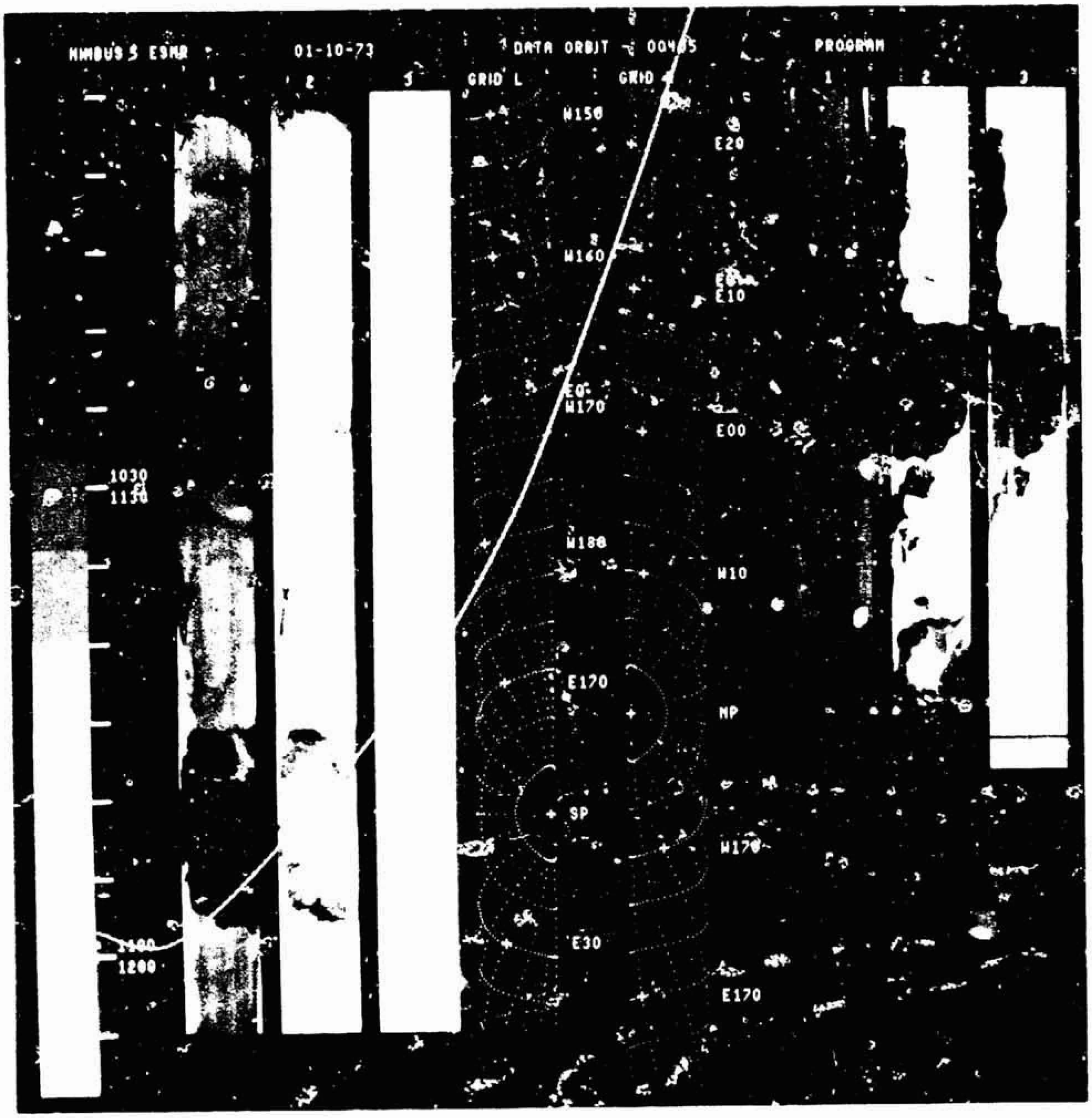
NIMBUS 5 ESMR
01-05-73
DATA ORBIT - 0033
PROGRAM
0830
0930
1
2
3
GRID L
GRID R
W120
E40
W140
EQ
E30
EQ
W140
E20
W150
0900
1000
E10
W170
NP
SP
W150
E50
W160

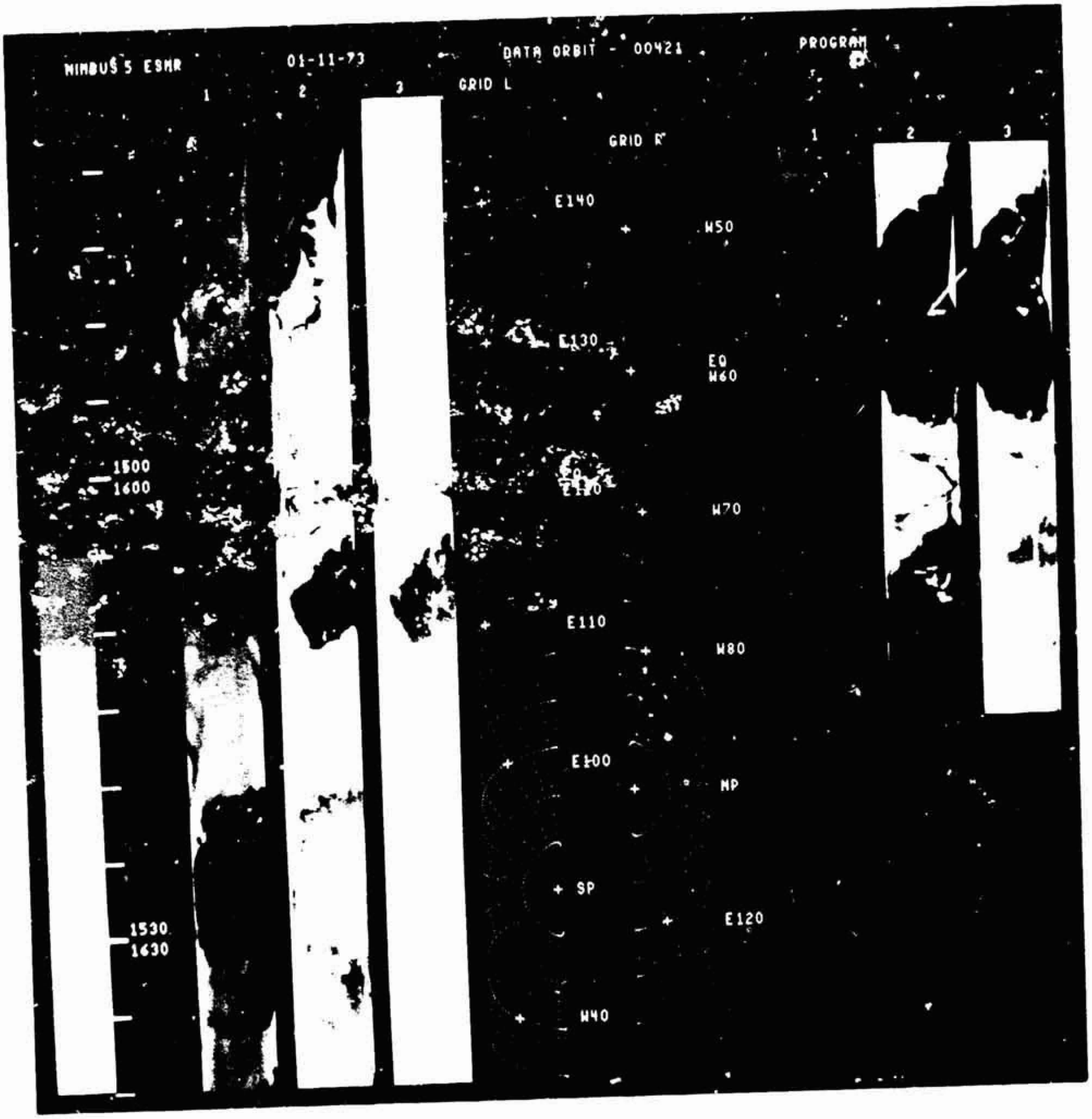

NIMBUS 5 ESMR
01-06-73
DATA ORBIT - 00356
PROGRAM
GRID L
GRID R
1830
1930
1900
2000
NP
E90
E70
EQ
E70
E60
E40
SP
W100
W110
EQ
W120
W130
W140
NP
E60

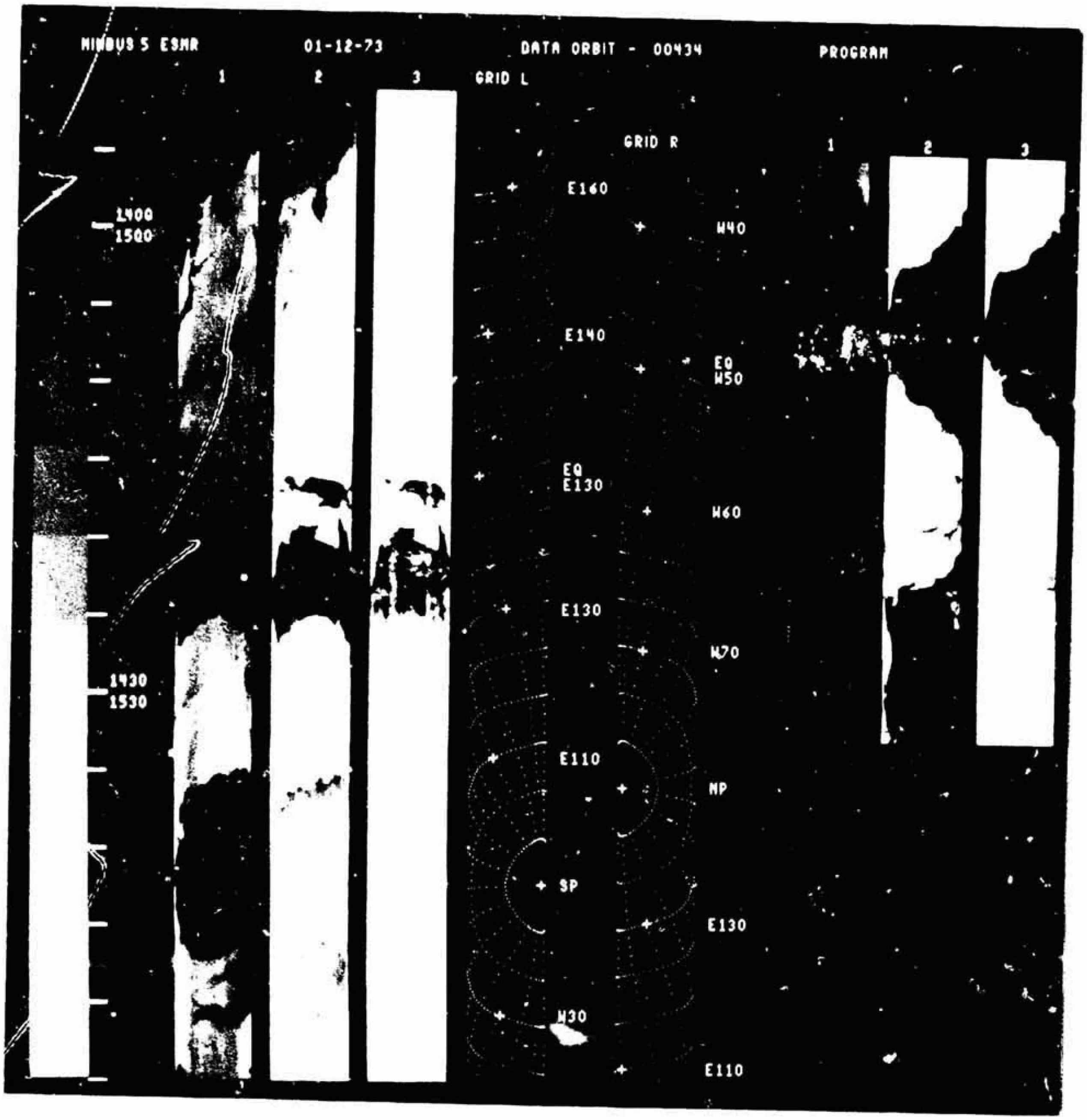

NIMBUS 5 ESMR
01-07-73
DATA ORBIT - 00367
PROGRAM
1
2
3
GRID L
GRID R
1
2
3
E150
W40
E140
EQ
W50
EQ
E130
W60
1430
1530
E120
W80
E110
NP
SP
E130
1500
1600
W30


NIMBUS 5 ESMR
01-08-73
DATA ORBIT - 00374
PROGRAM
1
2
3
GRID L
GRID R
W40
E130
W50
EQ
E120
EQ
W60
E110
0300
0400
W70
E100
W80
NP
SP
W60
0330
0430
E140
W80


NIMBUS 5 ESMR
01-09-73
PROGRAM
GRID L
GRID R
0200
0300
0230
0330
W20
E140
W40
EQ
E130
EQ
W50
E120
W50
E110
W70
NP
SP
W50
E150
W60


NIMBUS 5 ESMR
01-10-73
DATA ORBIT
PROGRAM
GRID L
W150
E20
W160
E10
W170
E00
W180
W10
E170
NP
SP
W170
E30
E170
1030
1130
1200


NIMBUS 5 ESMR
01-11-73
DATA ORBIT - 00421
PROGRAM
GRID L
GRID R
E140
W50
E130
EQ
W60
1500
1600
W70
E110
W80
E100
NP
SP
E120
1530
1630
W40


NIMBUS 5 ESMR
01-12-73
DATA ORBIT - 00434
PROGRAM
1
2
3
GRID L
GRID R
1
2
3
E160
W40
1400
1500
E140
EQ
W50
EQ
E130
W60
E130
W70
1430
1530
E110
NP
SP
E130
W30
E110


NIMBUS 5 ESMR
01-13-73
DATA ORBIT - 00441
PROGRAM
1
2
3
GRID L
GRID R
1
2
3
0230
0330
W30
E130
W50
EQ
E120
EQ
W50
E110
W60
E100
0300
0400
W80
NP
SP
W60
E140
W70

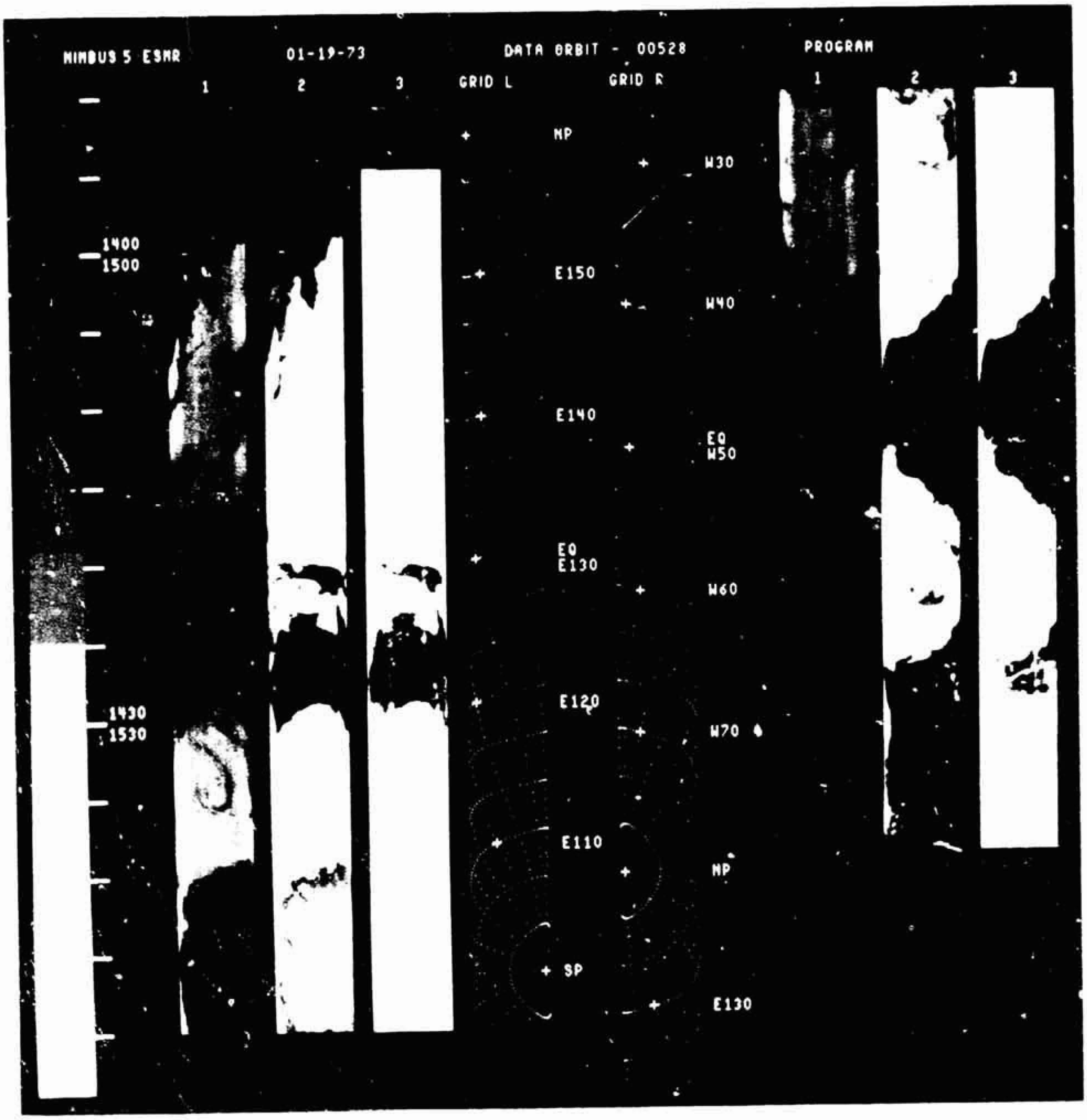

NIMBUS 5 ESMR
01-14-73
DATA ORBIT - 00455
PROGRAM
GRID L
GRID R
0330
0430
0400
0500
W50
E120
W60
EQ
E110
EQ
W70
E100
W80
E80
W90
NP
SP
W70
E130
W90

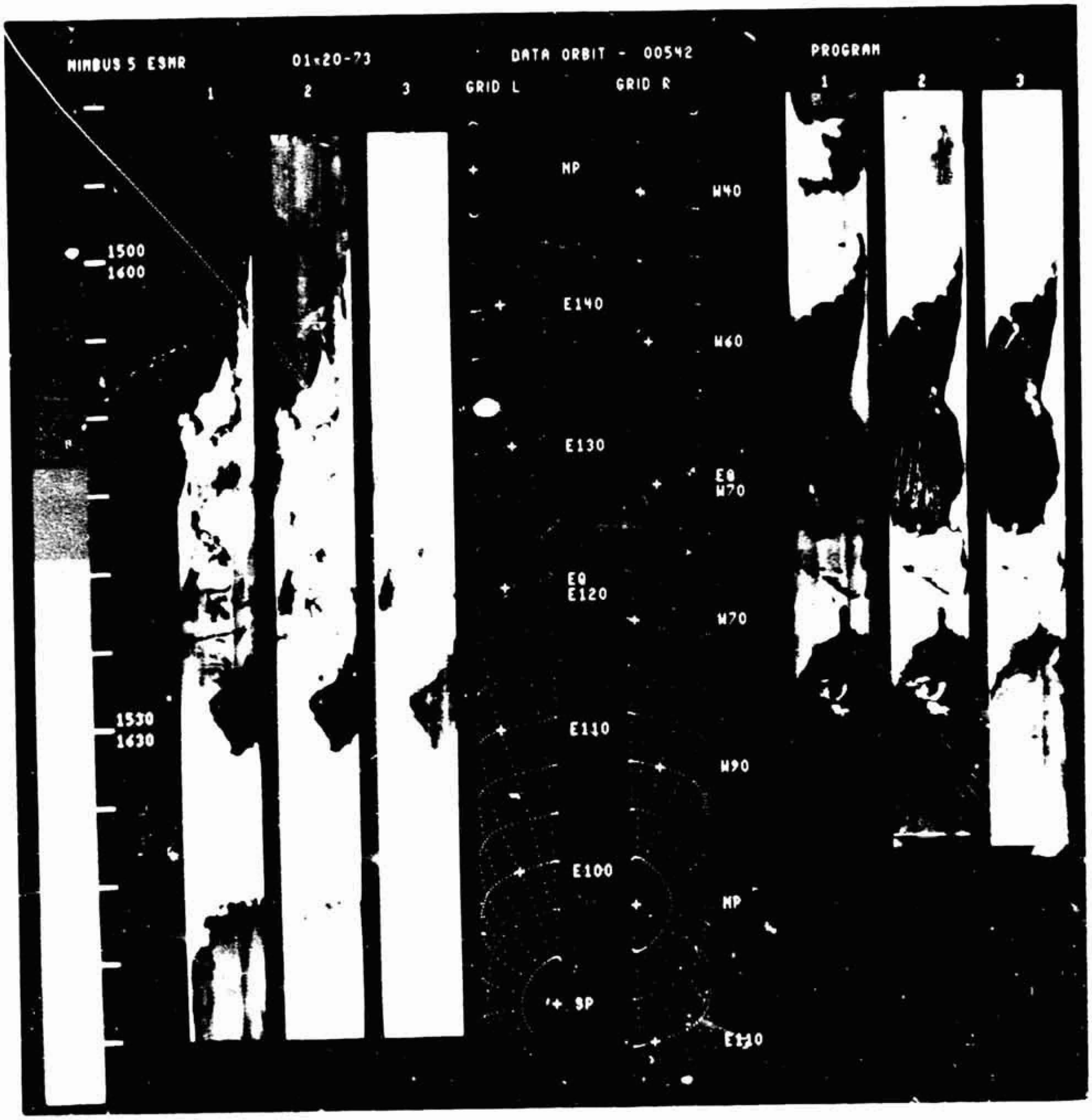

NIMBUS 5 ESMR
01-15-73
DATA ORBIT - 00468
PROGRAM
GRID L
GRID R
W40
E130
W50
EQ
E120
0300
0400
EQ
W60
E110
W70
E100
W80
NP
0330
0430
SP
W60
E140
W80

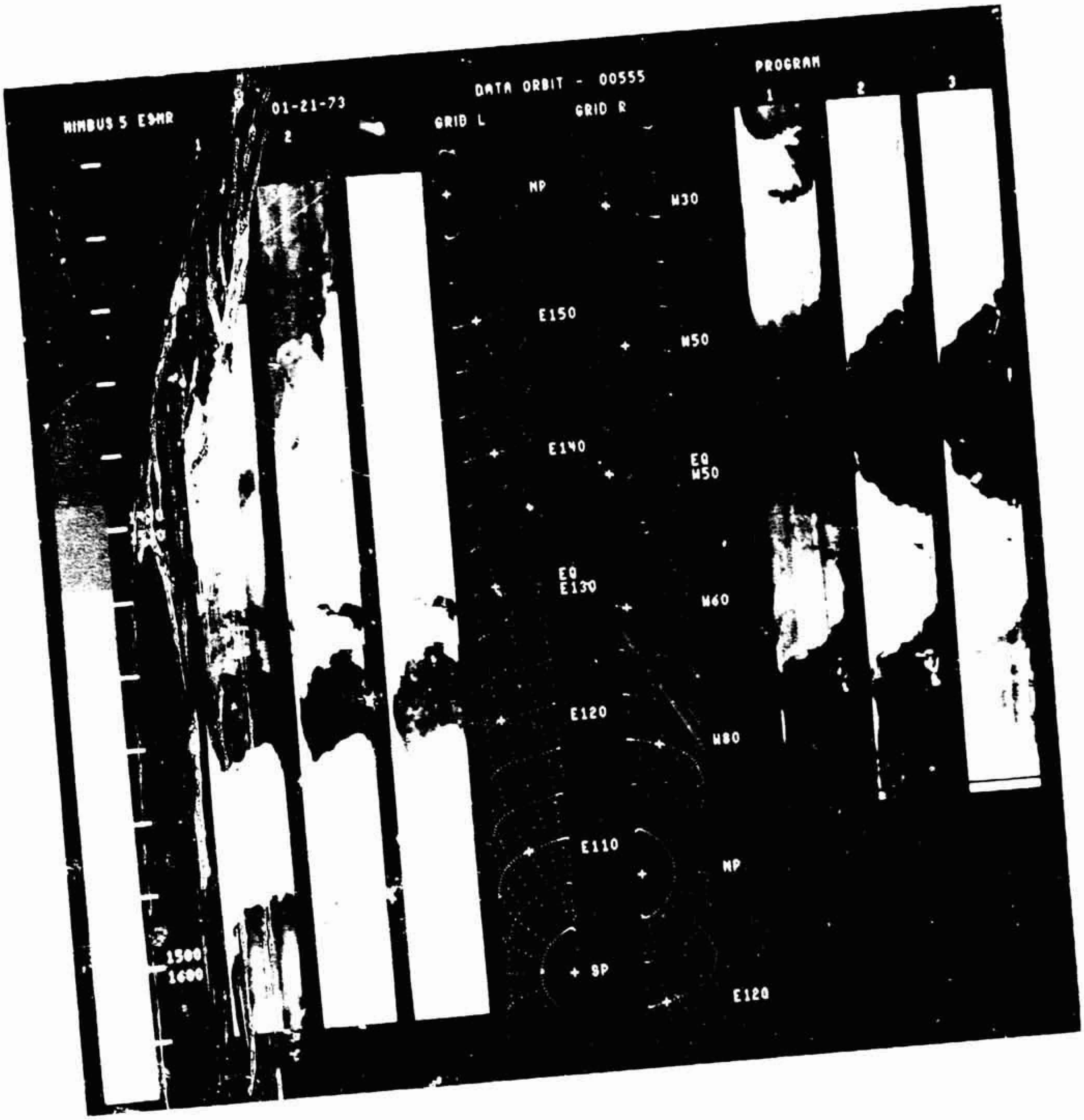

E140
E120
E110
E150

NIMBUS 5 ESMR
01-17-73
DATA ORBIT
PROGRAM
1
2
3
GRID L
GRID R
1
2
3
W110
EQ
E60
EQ
W120
E50
0700
0800
W120
E40
W140
NP
SP
W120
E80
0730
W130
EQ
W140

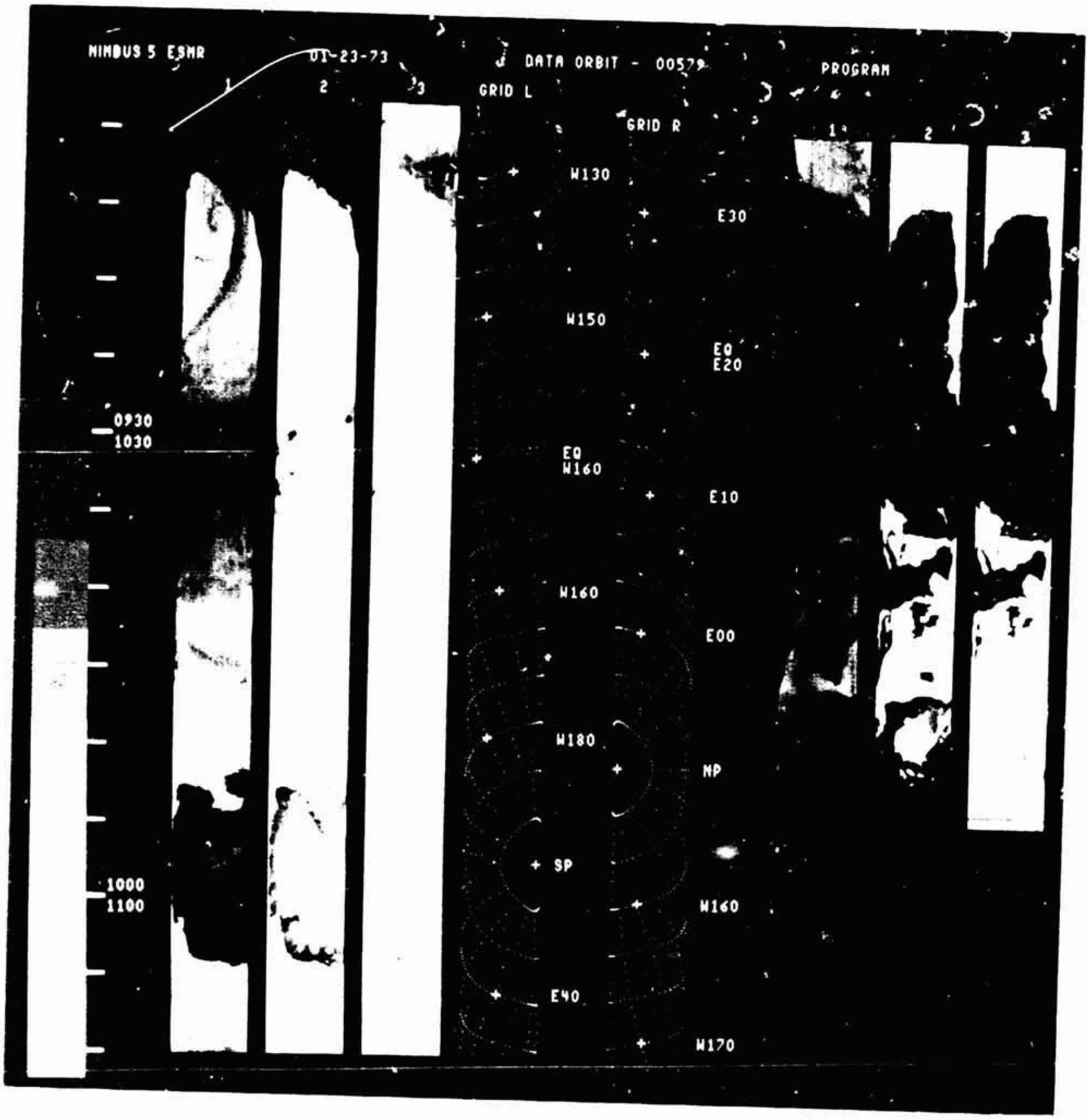
NIMBUS 5 ESMR
01-18-73
DATA ORBIT - 00513
PROGRAM
1
2
3
GRID L
GRID R
W160
E00
W180
EQ
W10
1130
1230
W20
E170
W30
E150
NP
SP
1300
E170
E10

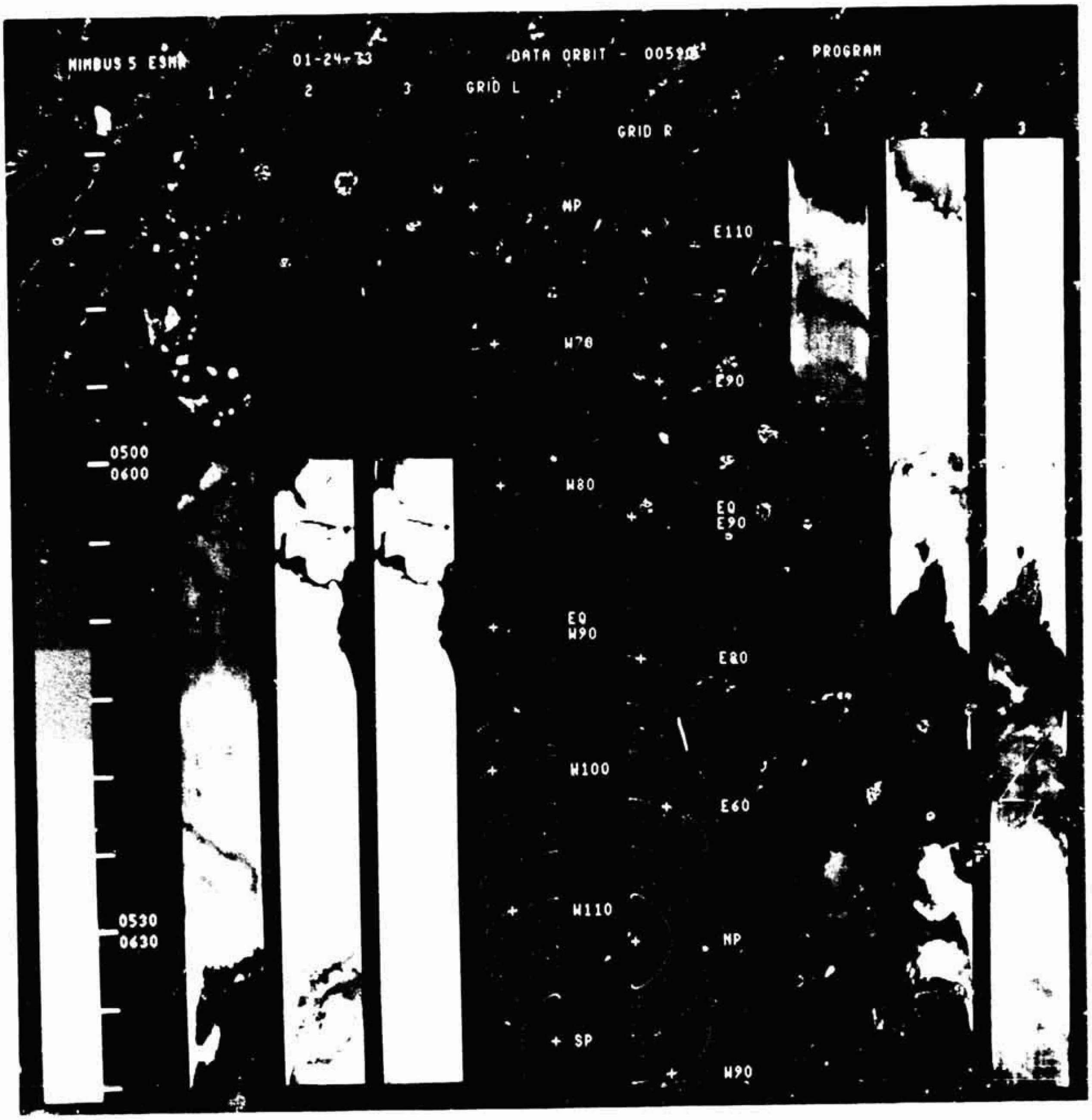

NIMBUS 5 ESMR
01-19-73
DATA ORBIT - 00528
PROGRAM
1
2
3
GRID L
GRID R
1
2
3
NP
W30
1400
1500
E150
W40
E140
EQ
W50
EQ
E130
W60
1430
1530
E120
W70
E110
NP
SP
E130


NIMBUS 5 ESMR
01-20-73
DATA ORBIT - 00542
PROGRAM
1
2
3
GRID L
GRID R
1
2
3
1500
1600
NP
W40
E140
W60
E130
EQ
W70
EQ
E120
W70
1530
1630
E110
W90
E100
NP
SP
E110


NIMBUS 5 ESMR
01-21-73
DATA ORBIT - 00555
GRID L
GRID R
PROGRAM
1
2
3
NP
W30
E150
W50
E140
EQ
W50
EQ
E130
W60
E120
W80
E110
NP
SP
E120
1500
1600


NIMBUS 5 ESMR
01-22-73
DATA ORBIT - 00562
PROGRAM
1
2
3
GRID L
GRID R
1
2
3
W40
E130
0300
0400
W50
EQ
E120
EQ
W60
E110
W70
E100
W80
NP
0330
0430
SP
W60
E140
W80


NIMBUS 5 ESMR
01-23-73
DATA ORBIT - 00579
PROGRAM
GRID L
GRID R
W130
E30
W150
EQ
E20
0930
1030
EQ
W160
E10
W160
E00
W180
NP
SP
1000
1100
W160
E40
W170


NIMBUS 5 ESMR
DATA ORBIT
PROGRAM
1
2
3
GRID L
GRID R
1
2
3
NP
E110
E90
0500
0600
W80
EQ
E90
EQ
W90
E80
W100
E60
0530
0630
W110
NP
SP
W90


NIMBUS 5 ESMR
01-25-73
DATA ORBIT - 00611
PROGRAM
GRID L
GRID R
SP
NP
W90
E90
W110
1830
1930
EQ
W120
E70
W120
E60
W140
1900
2000
E40
NP
E60

NIMBUS 5 ESMR
01-26-73
DATA ORBIT - 00616
PROGRAM
1
2
3
GRID L
GRID R
1
2
3
W50
E120
0330
0430
W60
EQ
E110
EQ
W70
E100
W80
E90
W90
0400
0500
NP
SP
W70
E130
W90


NIMBUS 5 ESMR
DATA ORBIT - 00638
PROGRAM
GRID L
GRID R
1830
1930
1900
2000
SP
NP
W100
E80
W110
E70
EQ
W120
EQ
E60
W130
E50
W140
E40
NP


NIMBUS 5 ESMR
01-28-73
DATA ORBIT - 00650
PROGRAM
1
2
3
GRID L
GRID R
1600
1700
1630
1730
NP
E120
E110
EQ
E100
E90
E80
SP
W60
W70
EQ
W80
W100
NP
E100


NIMBUS 5 ESMR
01-29-73
DATA ORBIT
PROGRAM
GRID 1
GRID 2
0300
0330
0430
W40
E120
W50
EQ
E120
EQ
W60
E110
W70
E90
W80
NP
SP
W80
E140
W80


NIMBUS 5 ESMR
01-30-73
DATA ORBIT - 00674
PROGRAM
GRID L
GRID R
1100
1200
W160
E00
W170
EQ
W10
EQ
W180
W10
1190
1230
E170
W30
E150
NP
SP
E170
E20


NIMBUS 5 ESMR
PROGRAM
1030
1130
W180
W20
E170
NP
1100
1200
SP
W180

SECTION 4

TEMPERATURE HUMIDITY INFRARED RADIOMETER MONTAGES

This section pictorially documents the data from the Temperature Humidity Infrared Radiometer Subsystem carried on the Nimbus 5 Meteorological Satellite. Section 4.1 contains all nighttime THIR 11.5 and 6.7 micrometer montages and Section 4.2 contains all daytime THIR 11.5 and 6.7 micrometer montages, arranged in chronological order. Key latitudes can be read from the superposed grids. Grid points are identified where each swath crosses 60°N, 30°N, EQUATOR, 30°S and 60°S.

Vellum Location Guide overlays, attached to the back of this document, are to be used for general orientation with the data presented in each THIR montage. Proper alignment of the overlay grid is accomplished by matching the grid indices on the equator with the two "T" marks on each montage.

Each THIR montage is provided with a time scale to determine the Greenwich Mean Time limits required to order processed THIR grid print maps (see page 38, The Nimbus 5 User's Guide). The time scale is used to determine the number of minutes from ascending (daytime data) or descending (nighttime data) node time for the interval of data required. To obtain the GMT for daytime data, the measured time is to be added to the ascending node time in the northern hemisphere and subtracted in the southern hemisphere. For nighttime data, the measured time is to be subtracted from the descending node time in the northern hemisphere and added in the southern hemisphere. The ascending and descending node times are given in Table 2-2.

The following alternate procedure also establishes GMT limits. Knowing the latitude limits of the study area, the minutes from ascending or descending node can be directly interpolated from Table 4-1. These time values can then be added to or subtracted from node times given in Table 2-2.

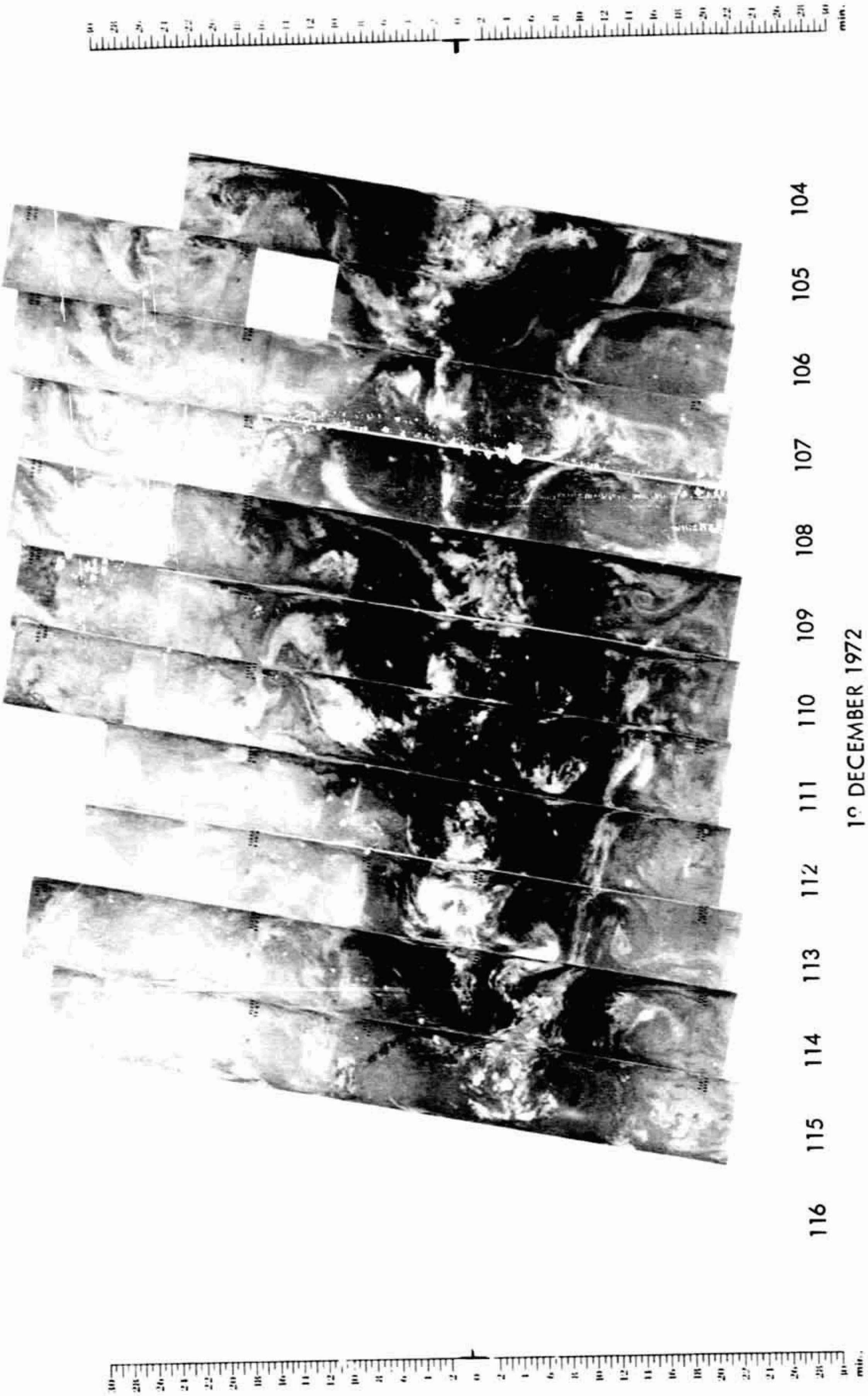
A description of the THIR experiment and instructions for ordering THIR data may be found in The Nimbus 5 User's Guide, Section 2.

Table 4-1

LATITUDE VERSUS MINUTES FROM ASCENDING OR DESCENDING NODE

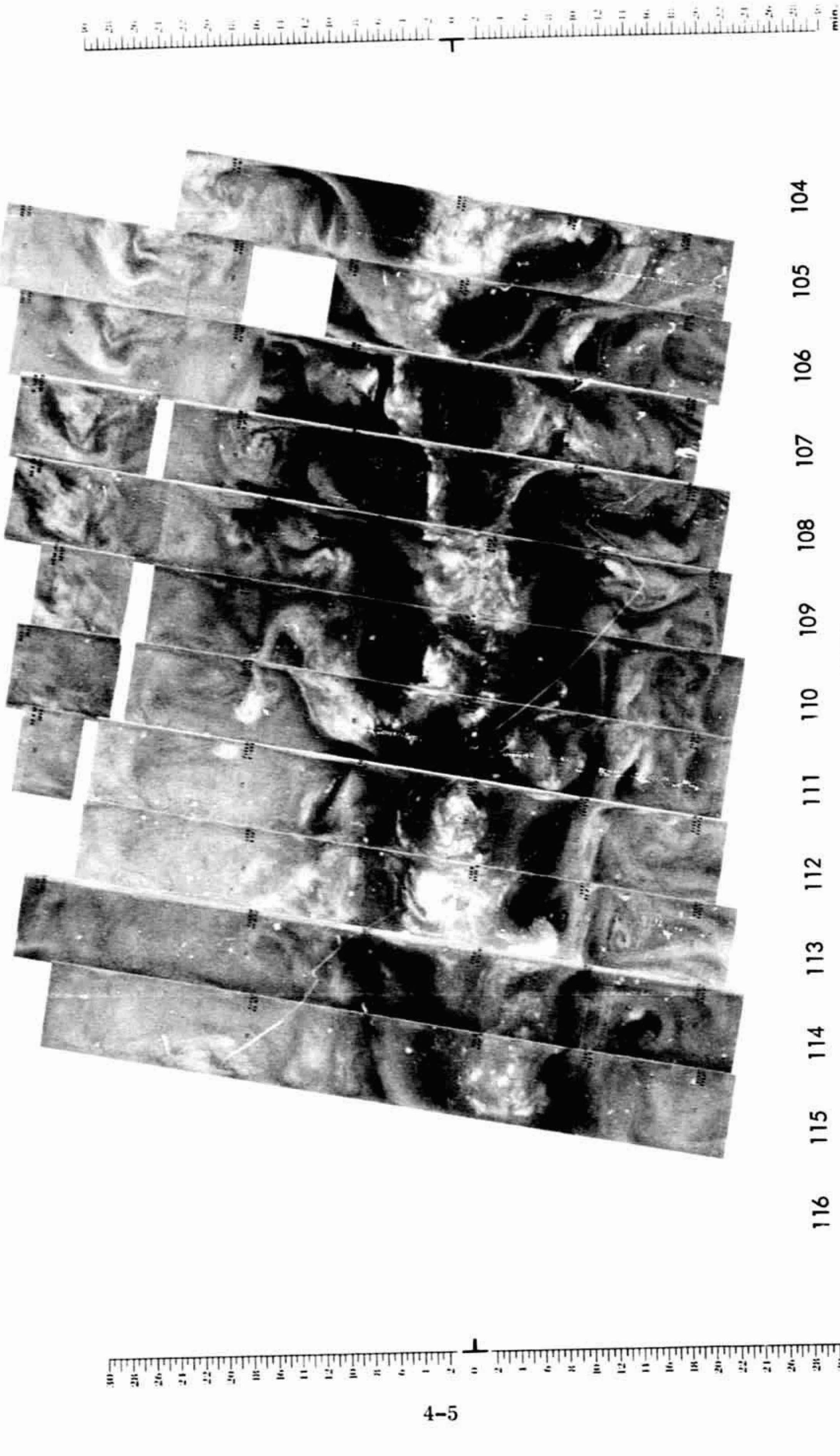
Latitude from AN or DN	Minutes and Seconds from AN or DN
0	0:00
5	1:31
10	3:02
15	4:33
20	6:03
25	7:34
30	9:05
35	10:36
40	12:08
45	13:40
50	15:12
55	16:44
60	18:18
65	19:52
70	21:33
75	23:26
78	24:44
80.1	26:49
78	29:00
75	30:09
70	31:51
65	33:35

SECTION 4.1
TEMPERATURE HUMIDITY INFRARED RADIOMETER
NIGHTTIME MONTAGES



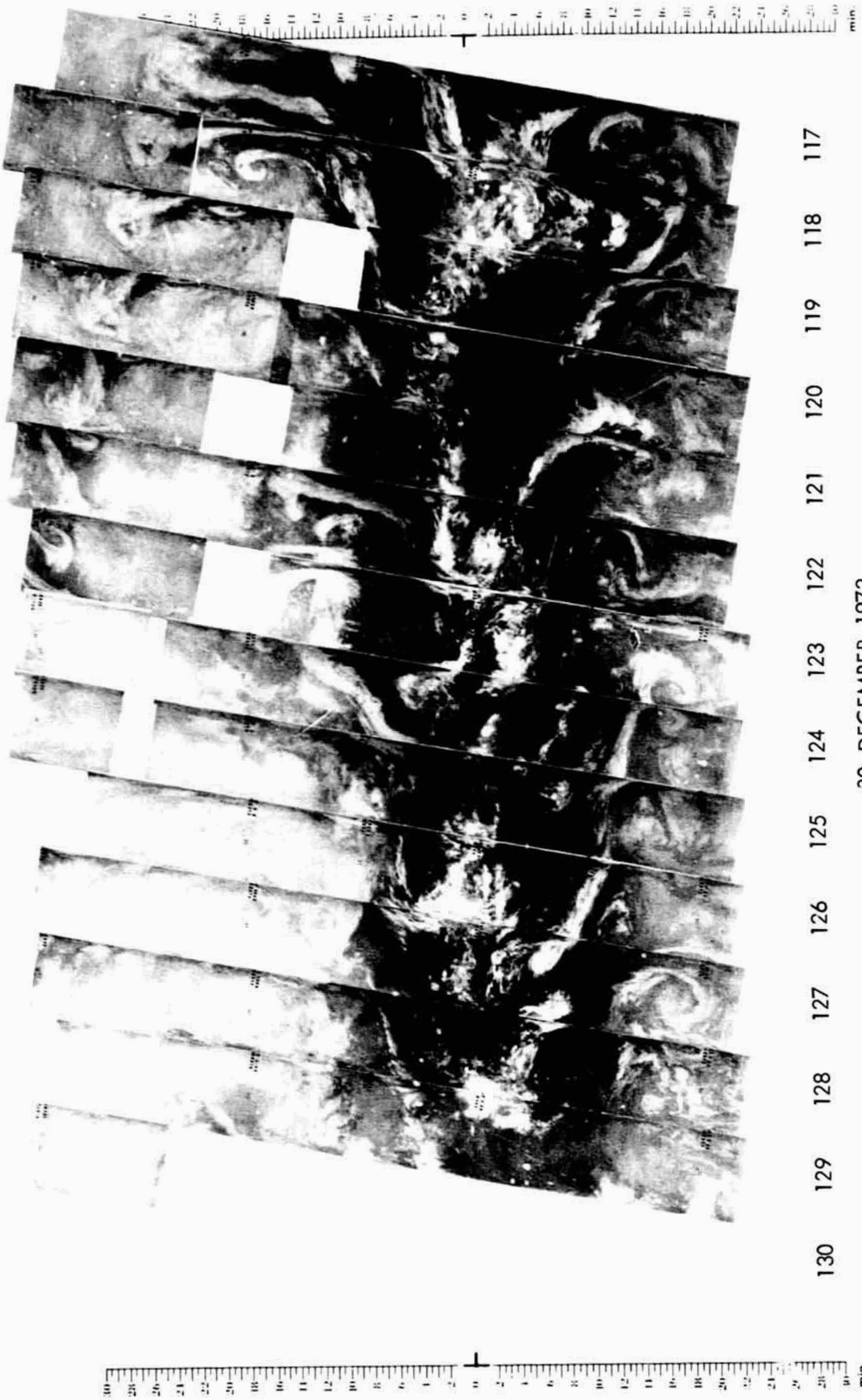
1° DECEMBER 1972

11.5 μm



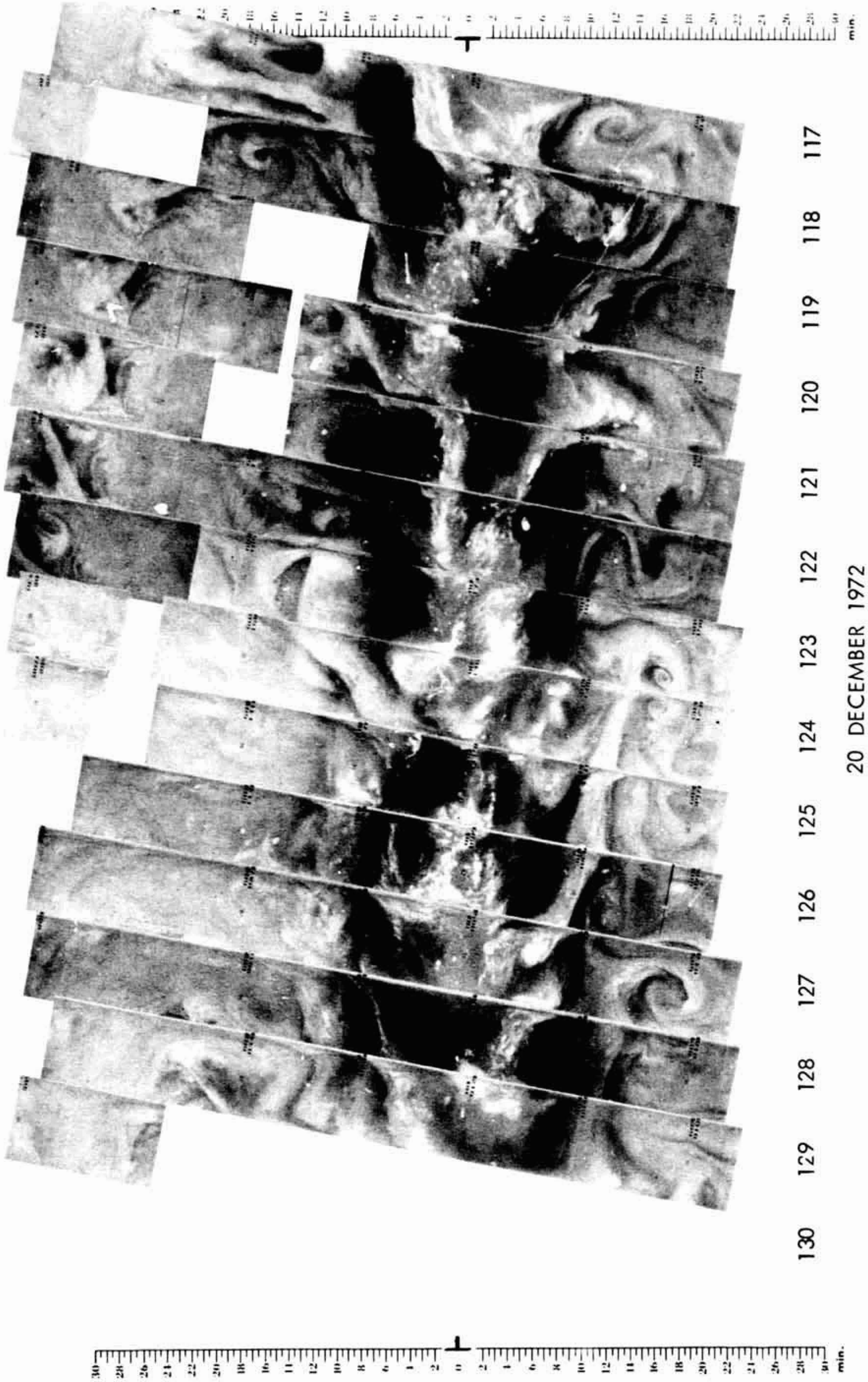
19 DECEMBER 1972

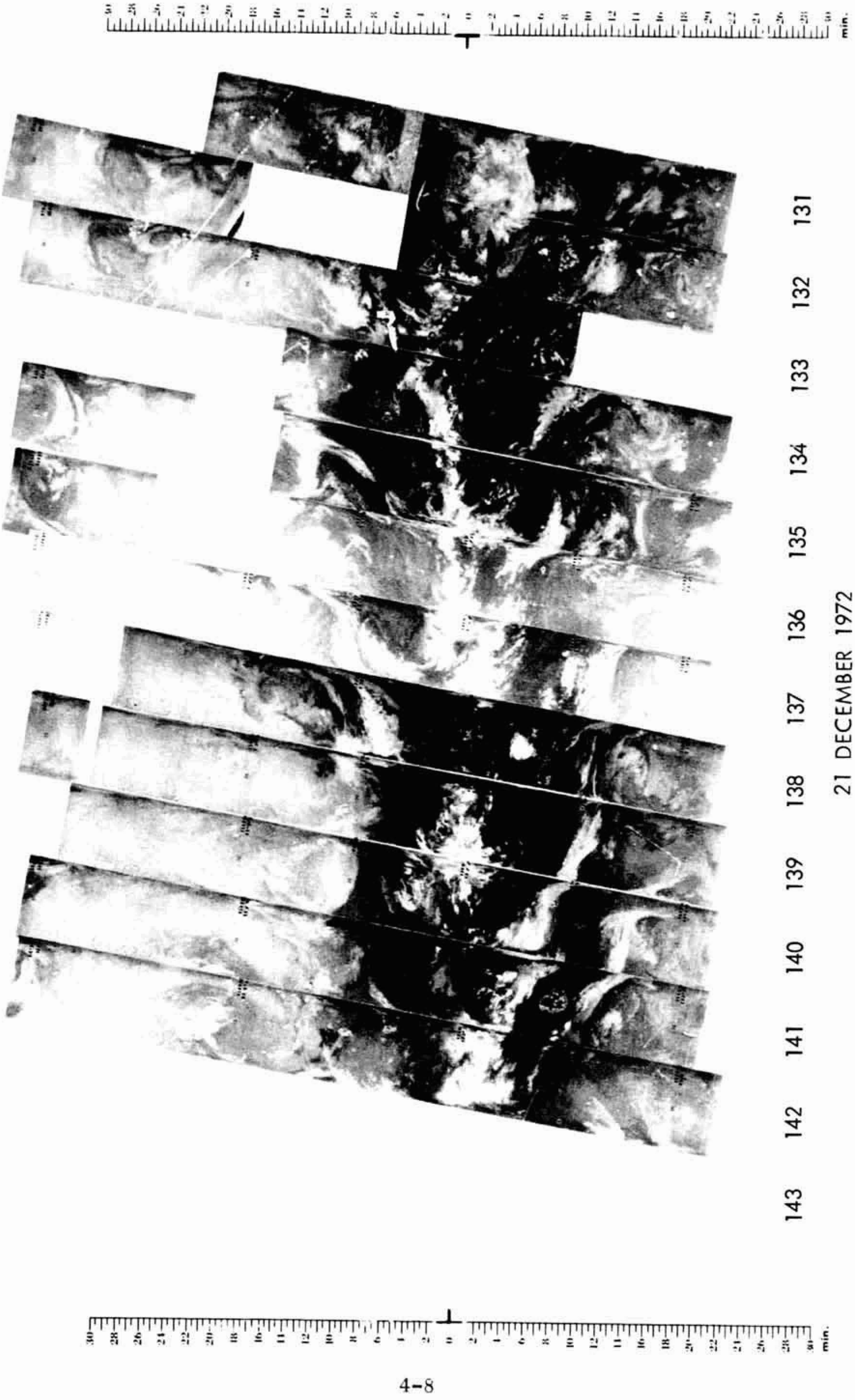
6.7 μm



20 DECEMBER 1972

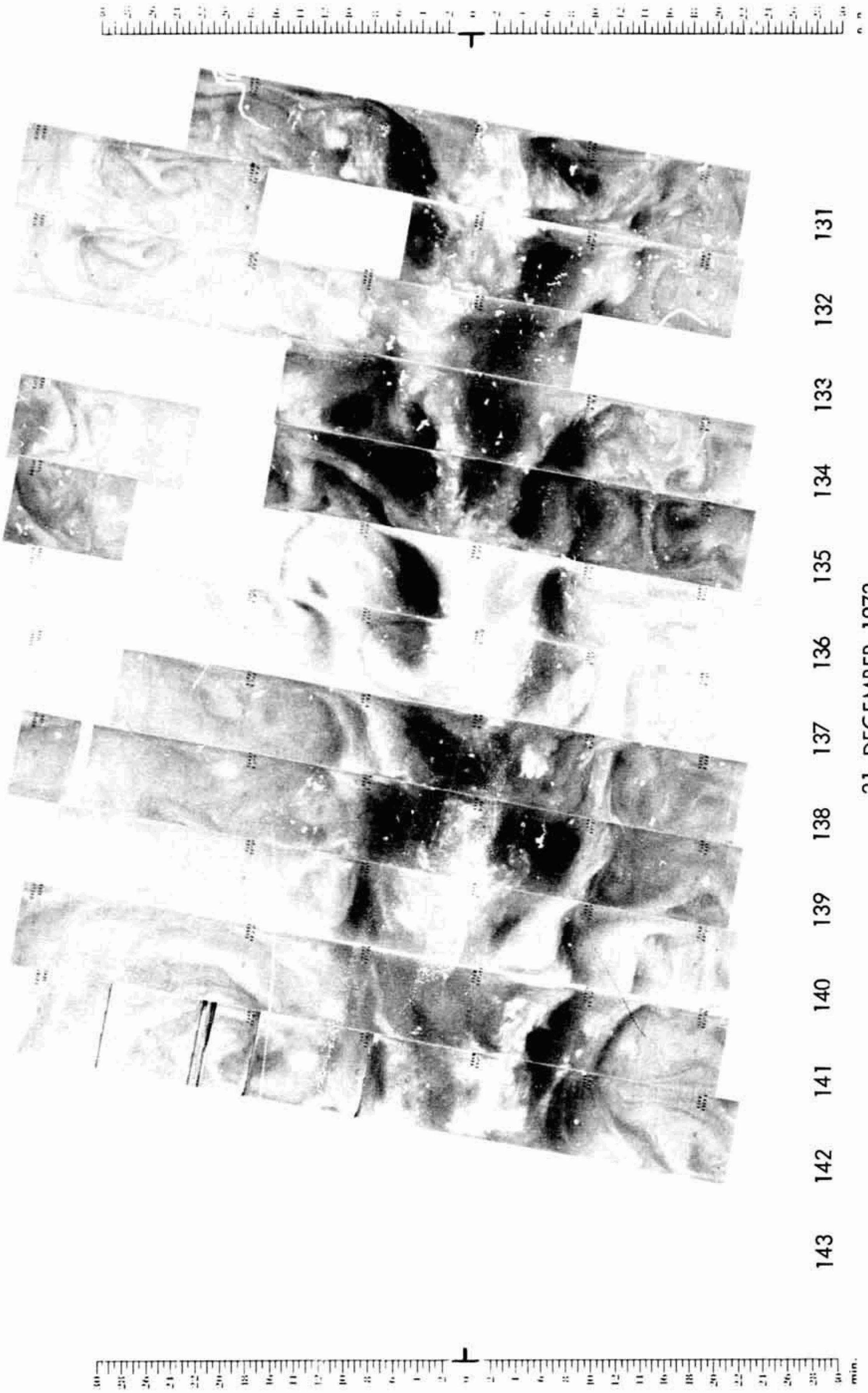
11.5 μm


117
118
119
120
121
122
123
124
125
126
127
128
129
130
20 DECEMBER 1972
6.7 μm
min.



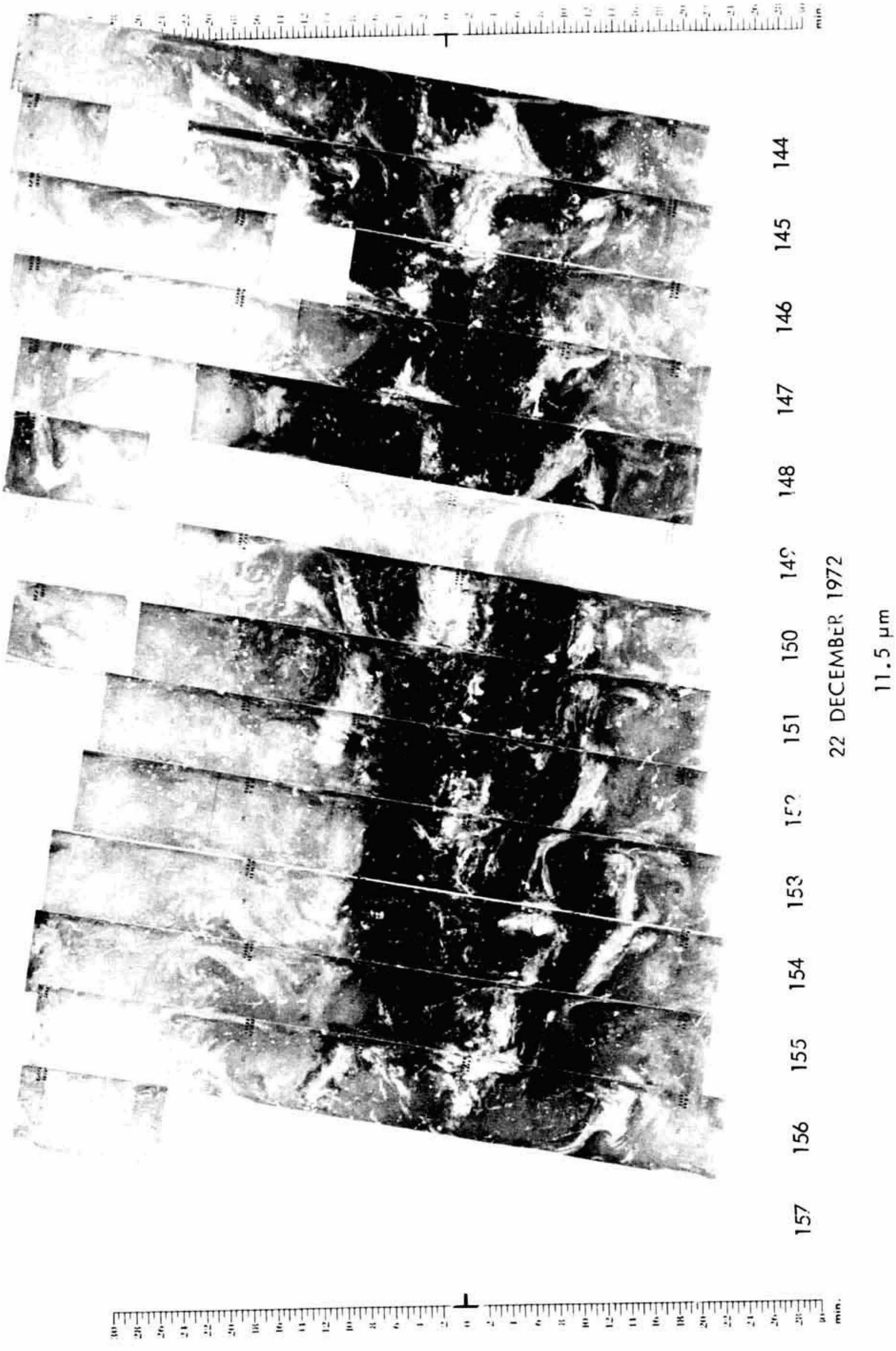
21 DECEMBER 1972

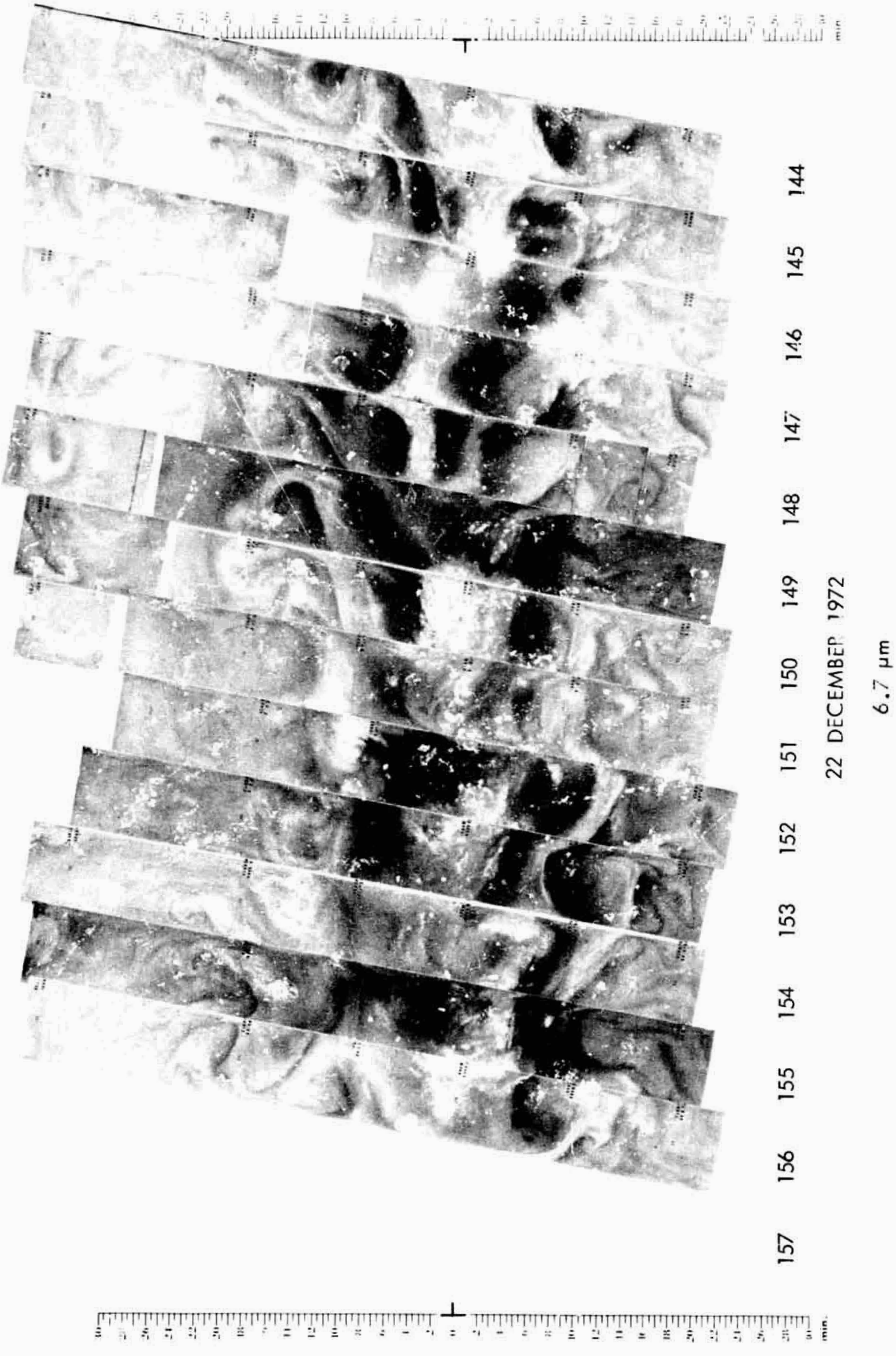
11.5 µm

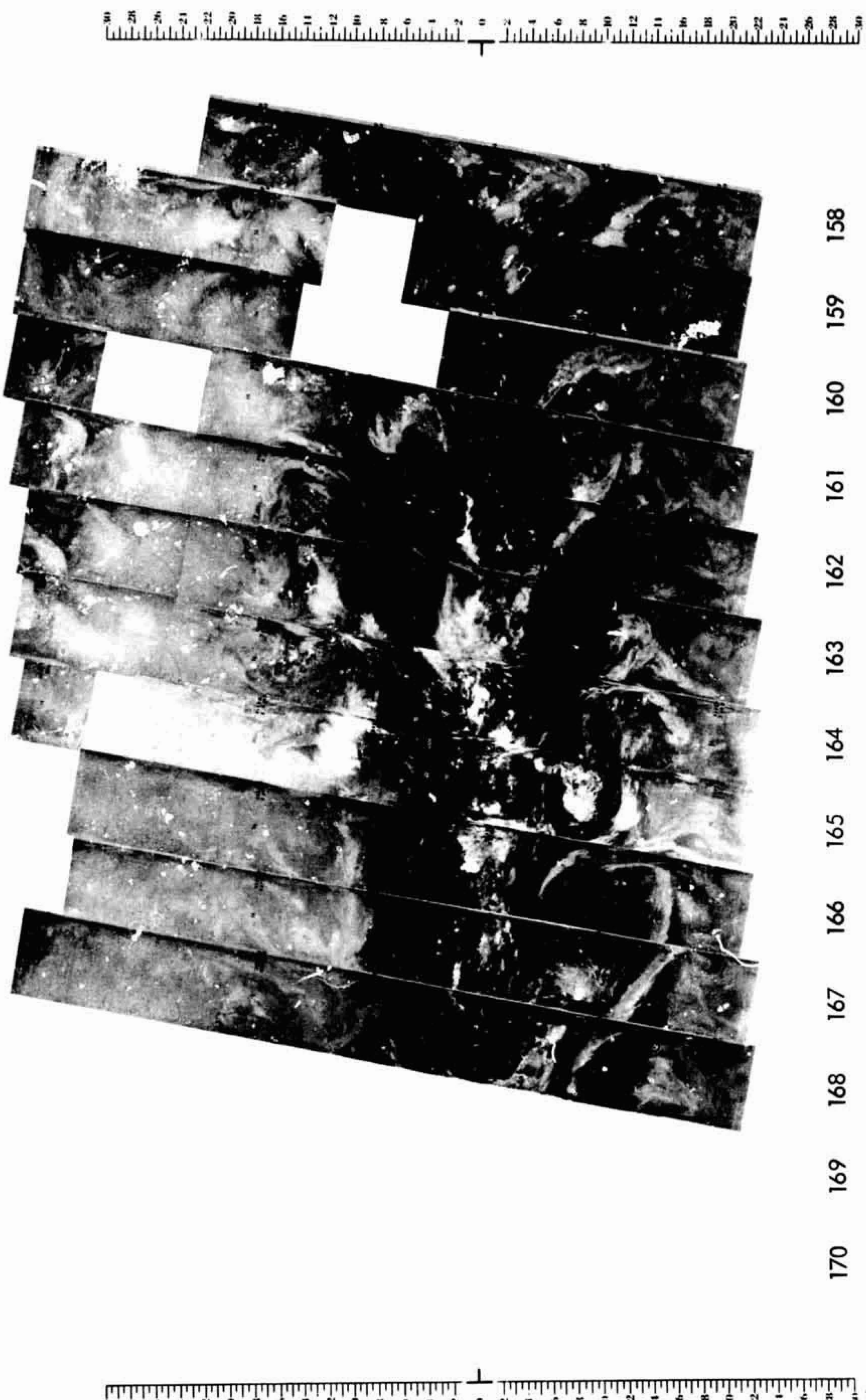


21 DECEMBER 1972

6.7 μm

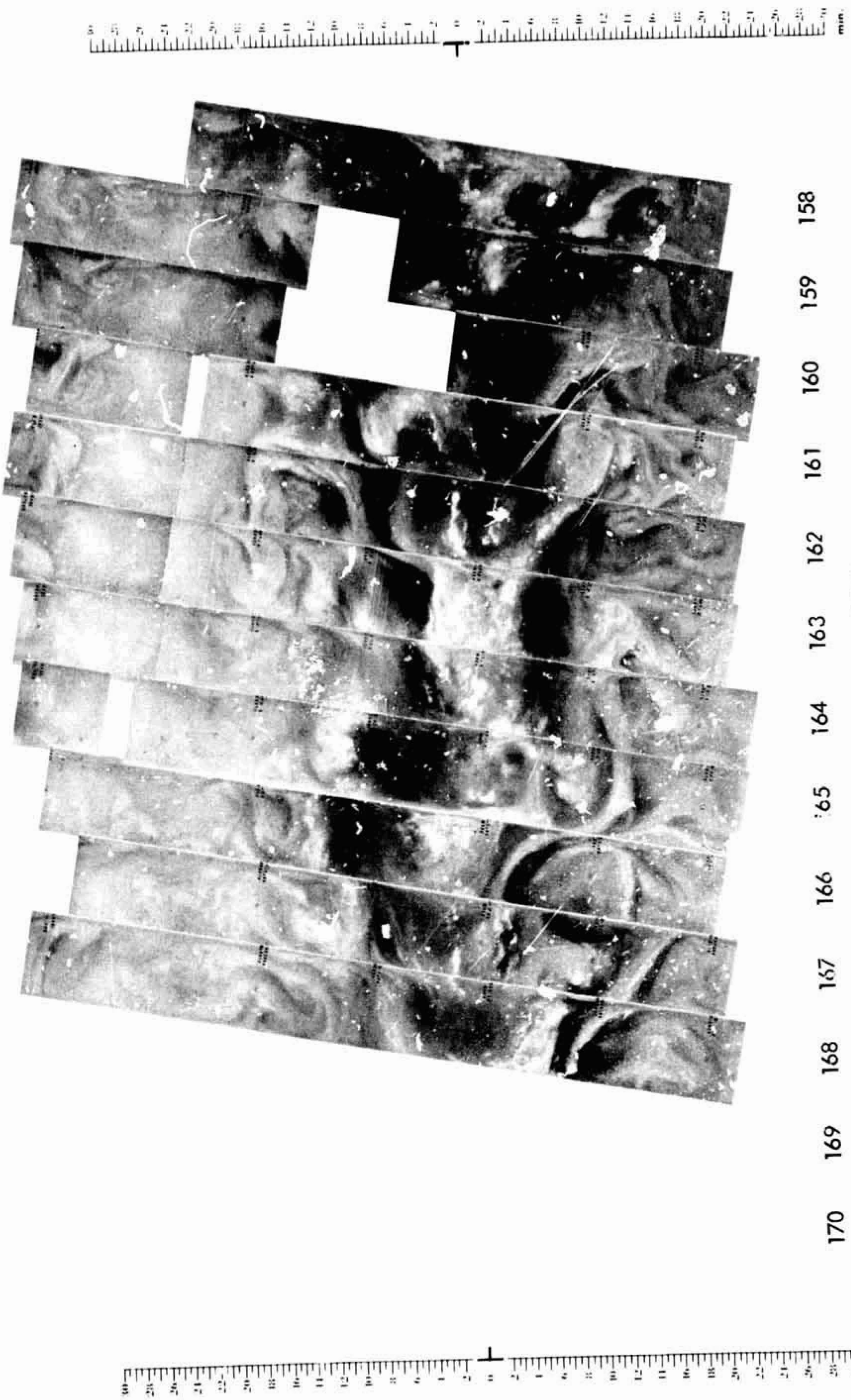

144
145
146
147
148
149
150
151
152
153
154
155
156
157
22 DECEMBER 1972
11.5 µm
min.


144
145
146
147
148
149
150
151
152
153
154
155
156
157
22 DECEMBER 1972
6.7 μm



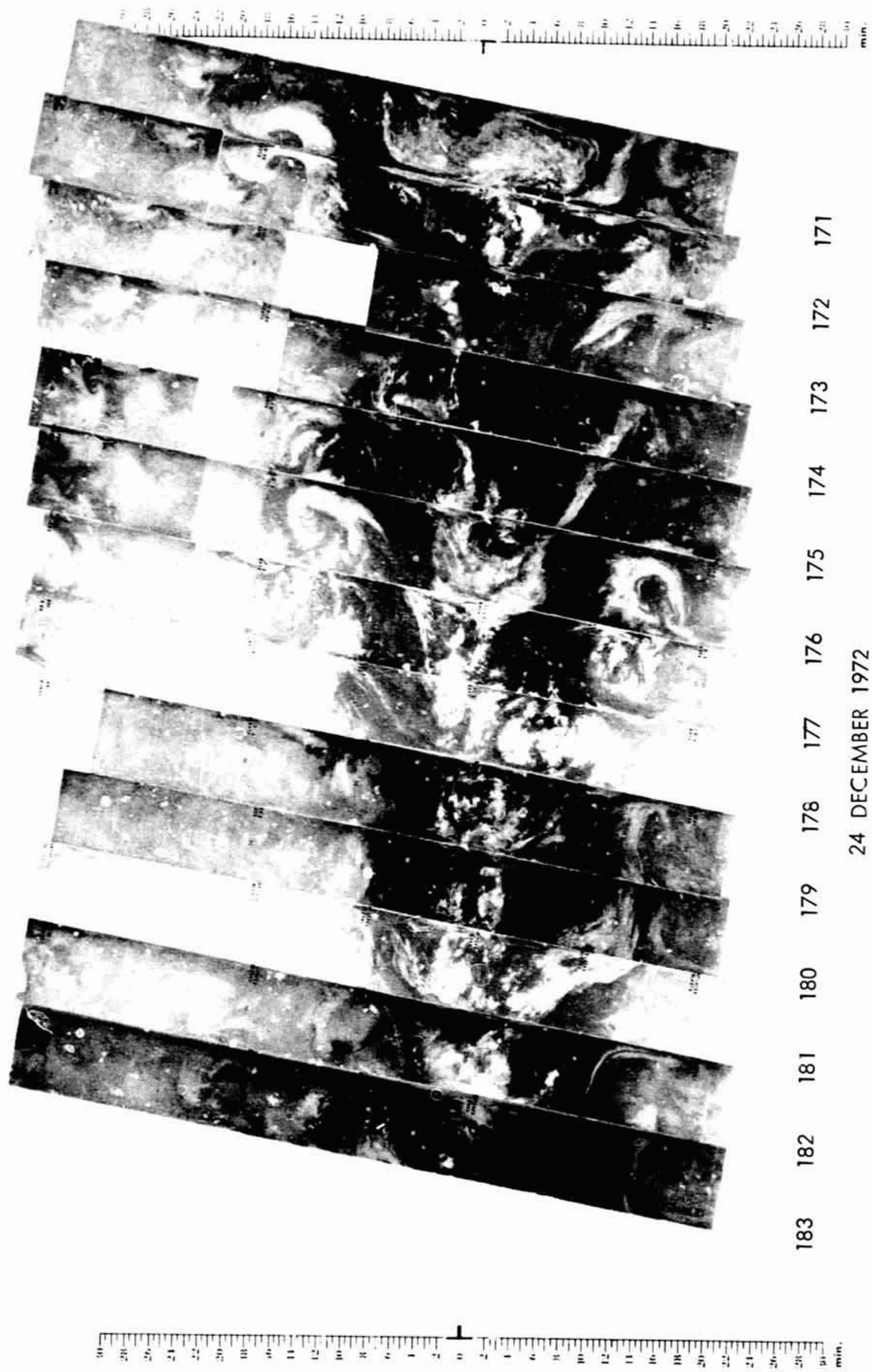
23 DECEMBER 1972

11.5 μm



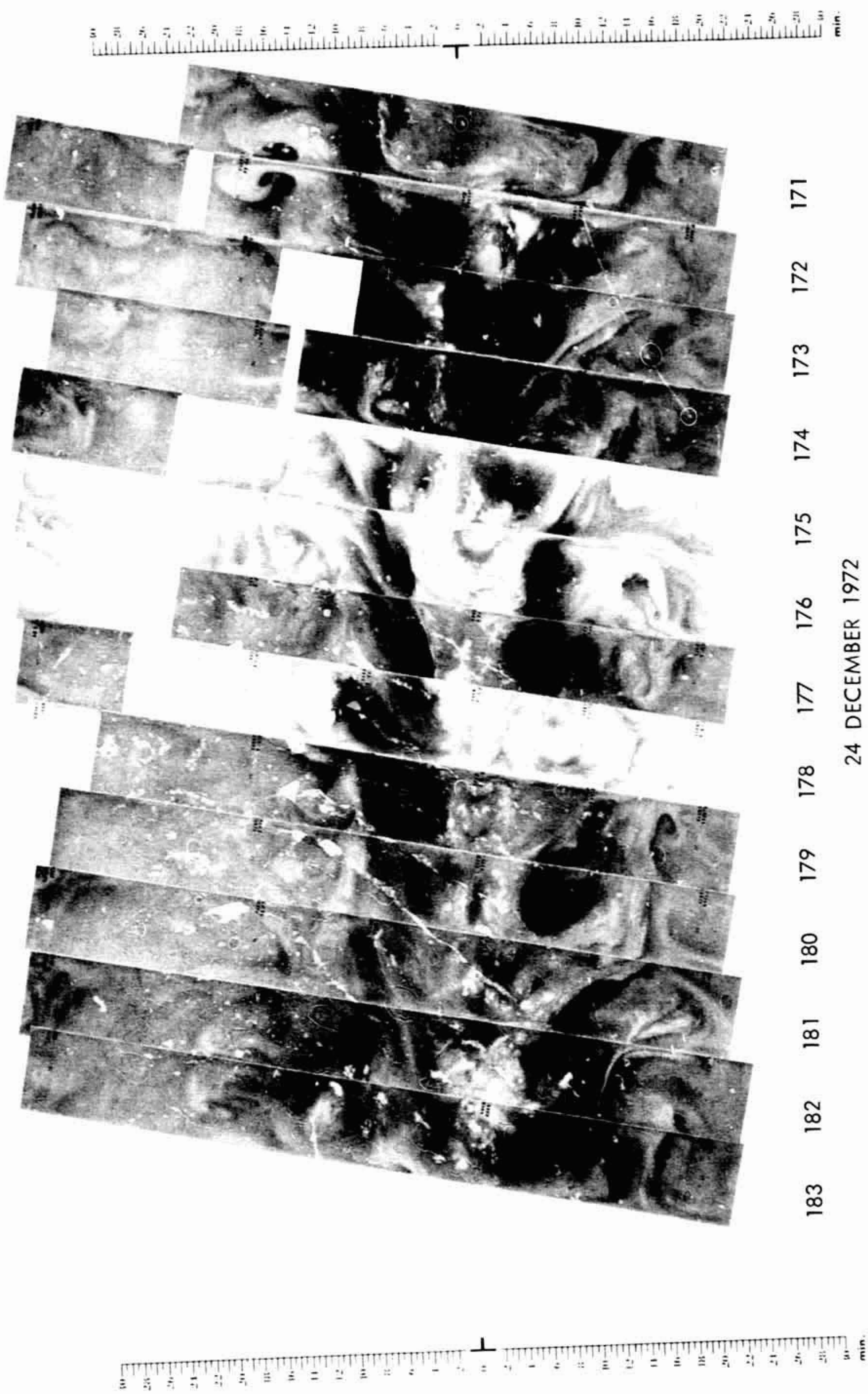
23 DECEMBER 1972

6.7 μm



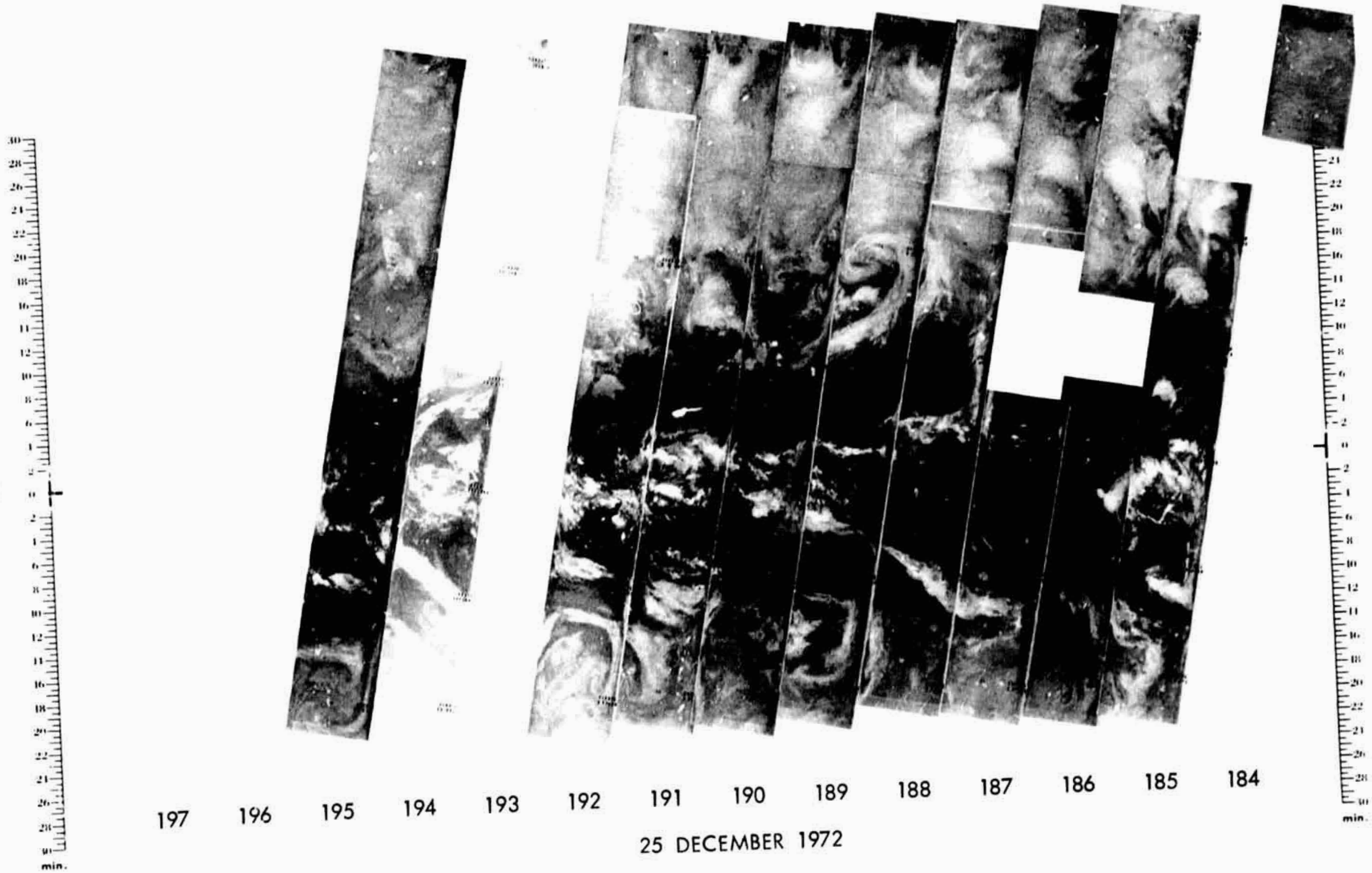
24 DECEMBER 1972

11.5 µm



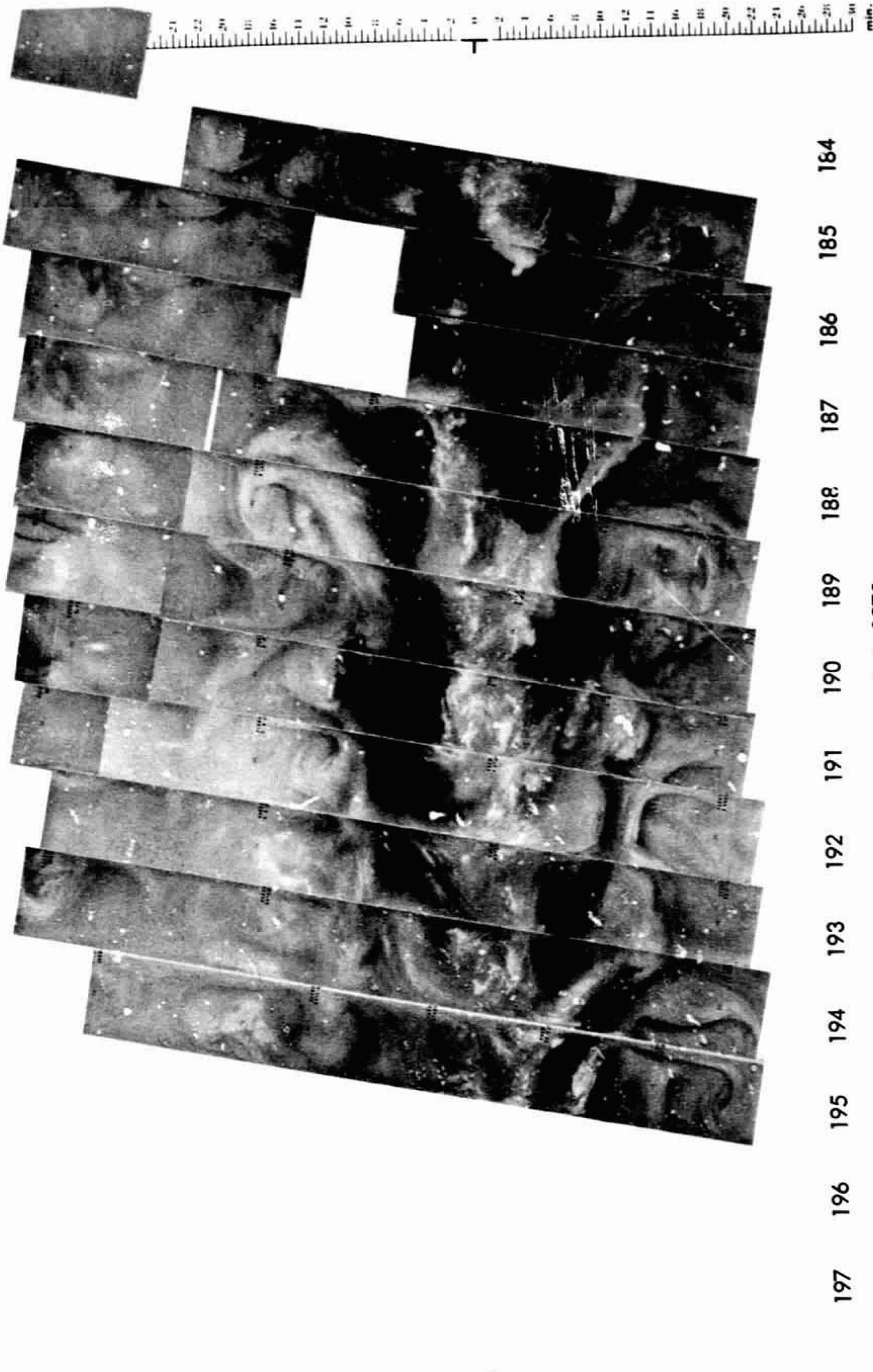
24 DECEMBER 1972

6.7 μm



25 DECEMBER 1972

11.5 μm

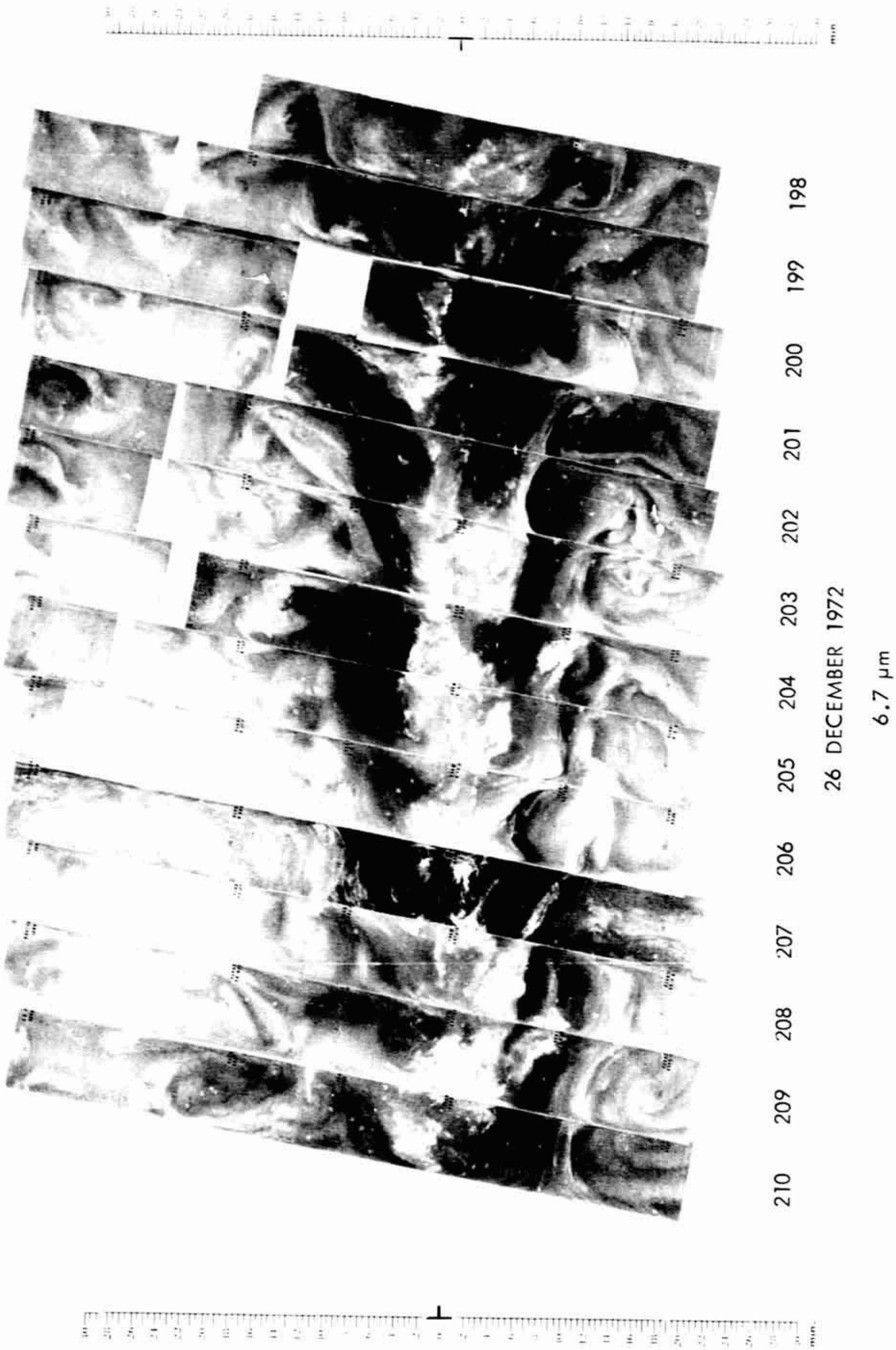


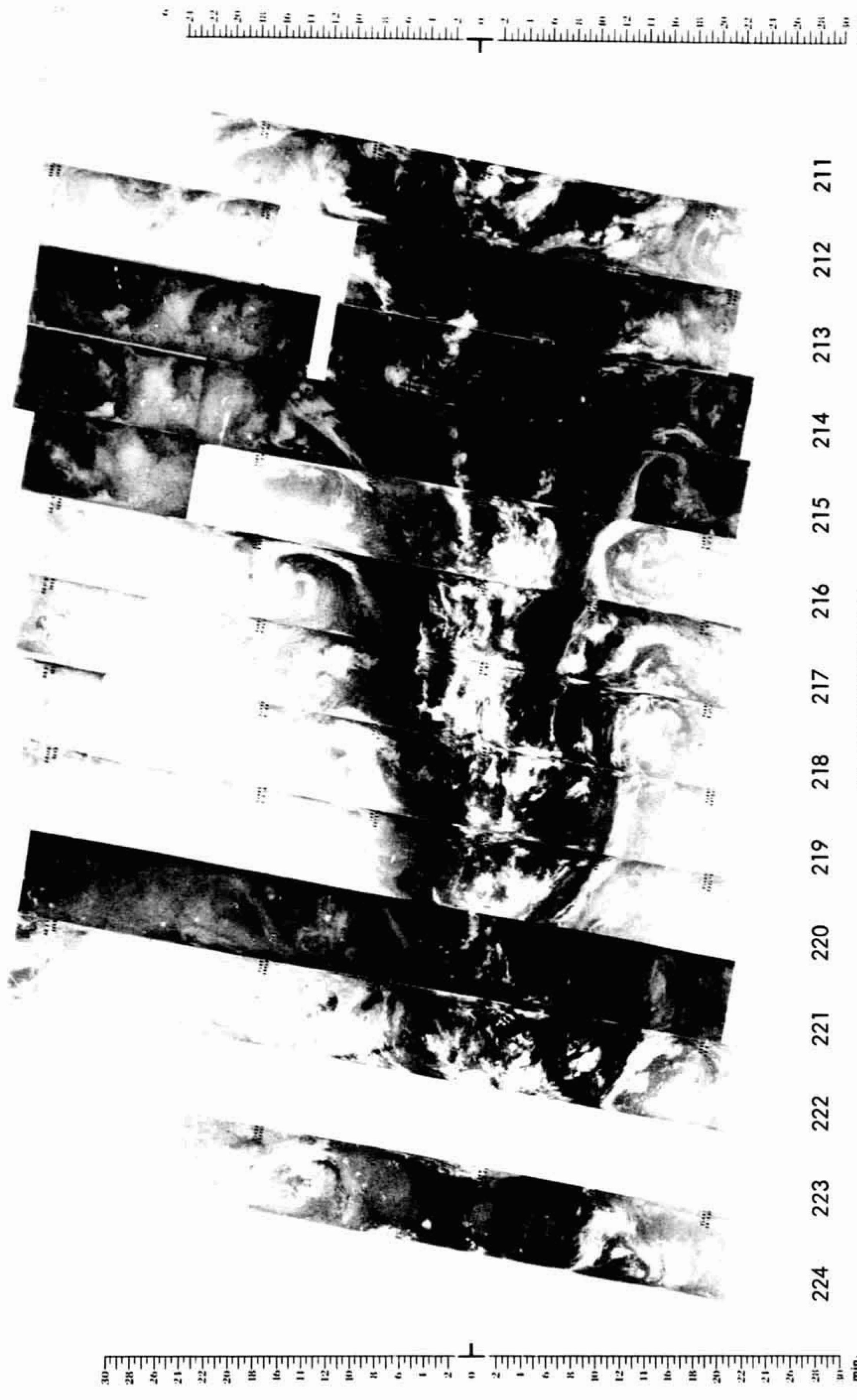
25 DECEMBER 1972

6.7 μm

26 DECEMBER 1972

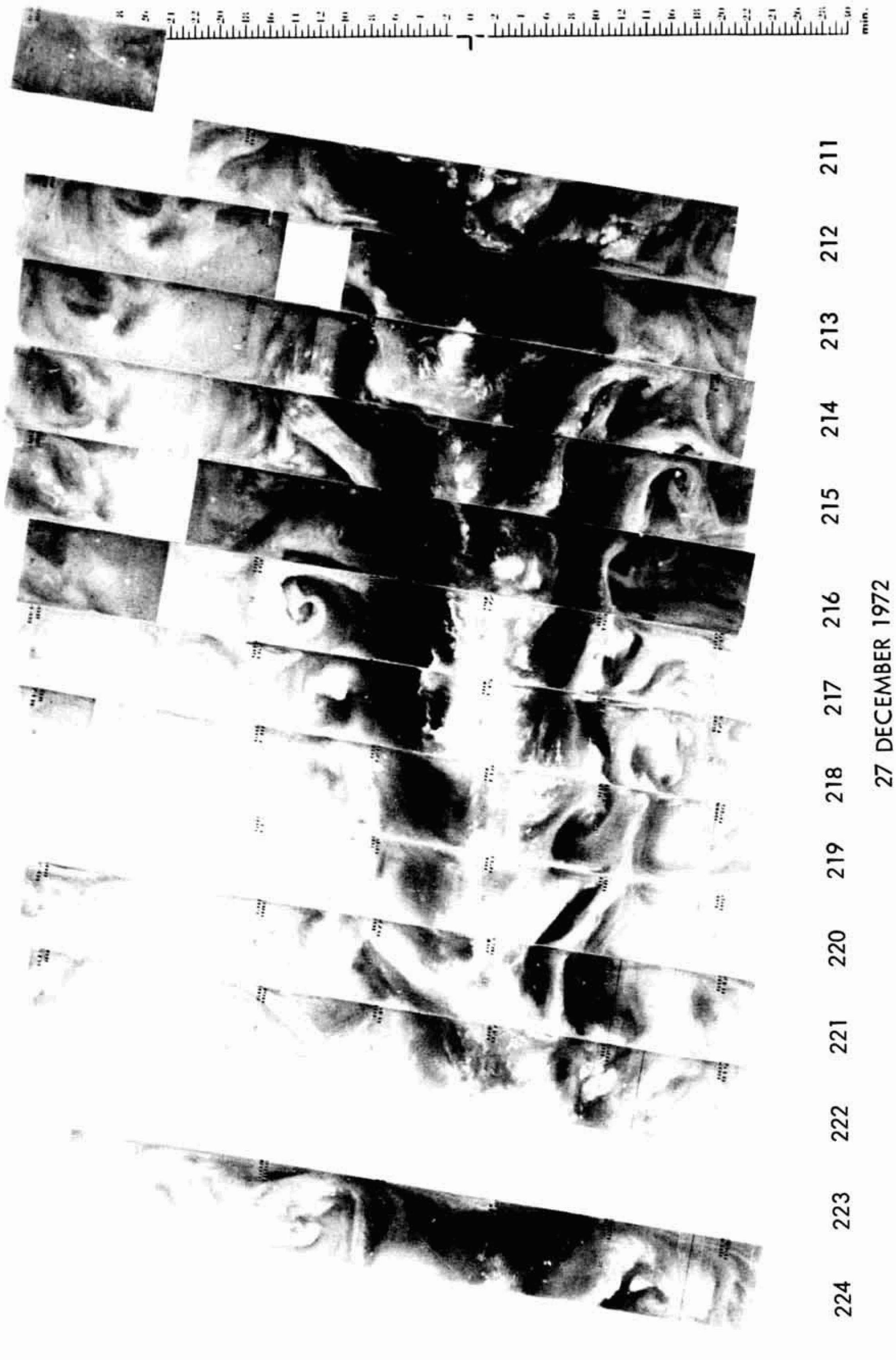
11.5 µm


198
199
200
201
202
203
204
205
206
207
208
209
210
26 DECEMBER 1972
6.7 μm



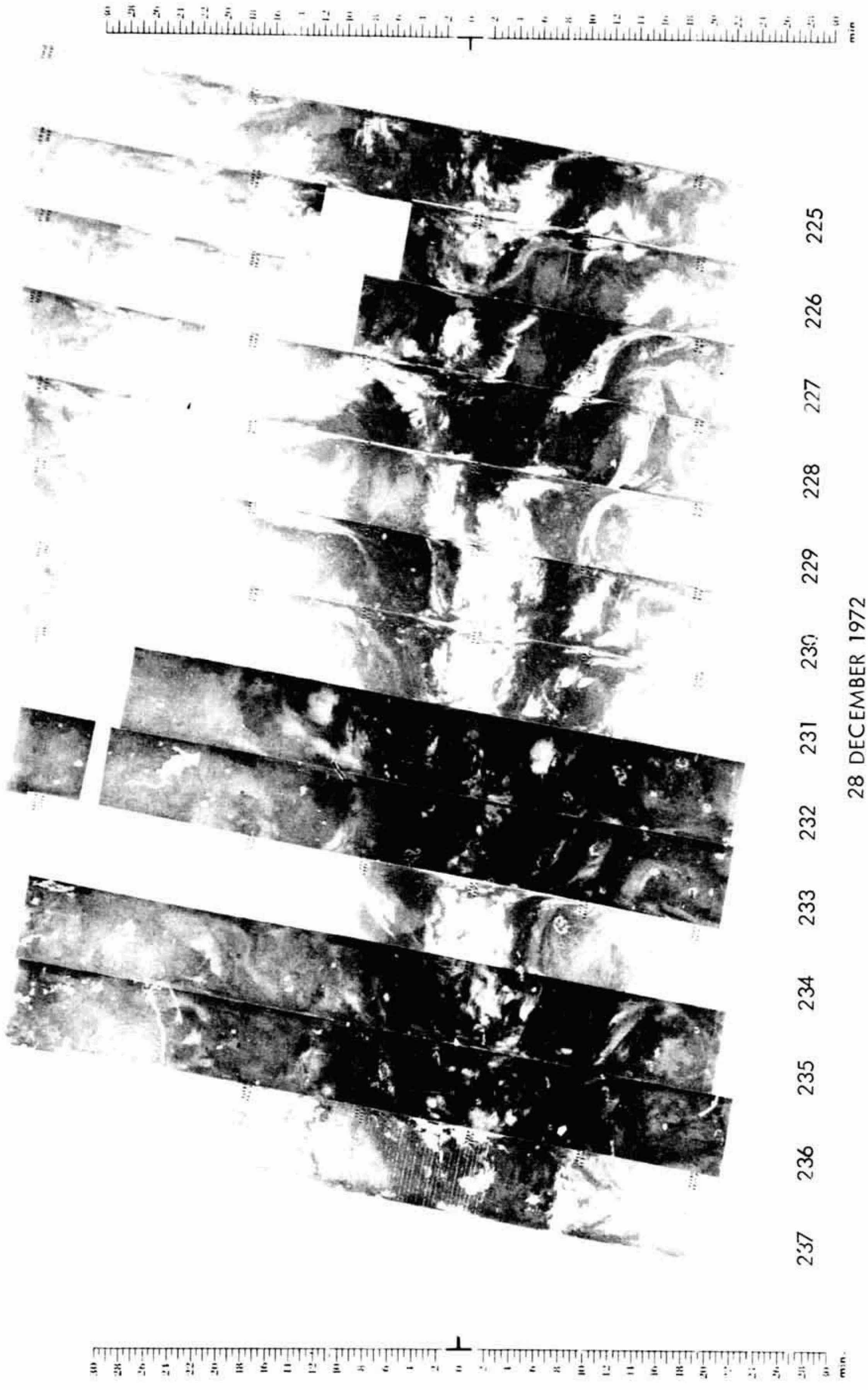
27 DECEMBER 1972

11.5 μm



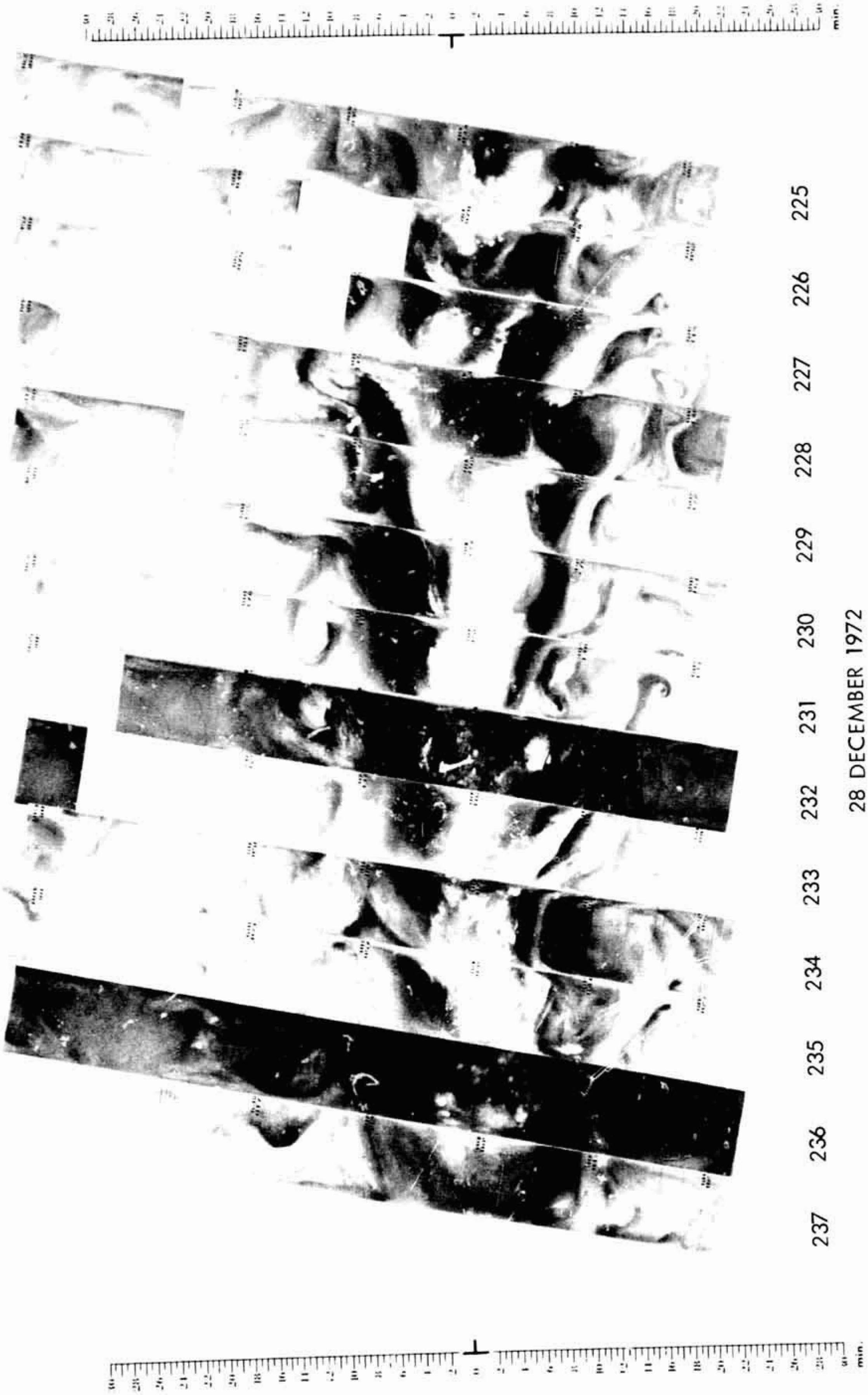
27 DECEMBER 1972

6.7 µm



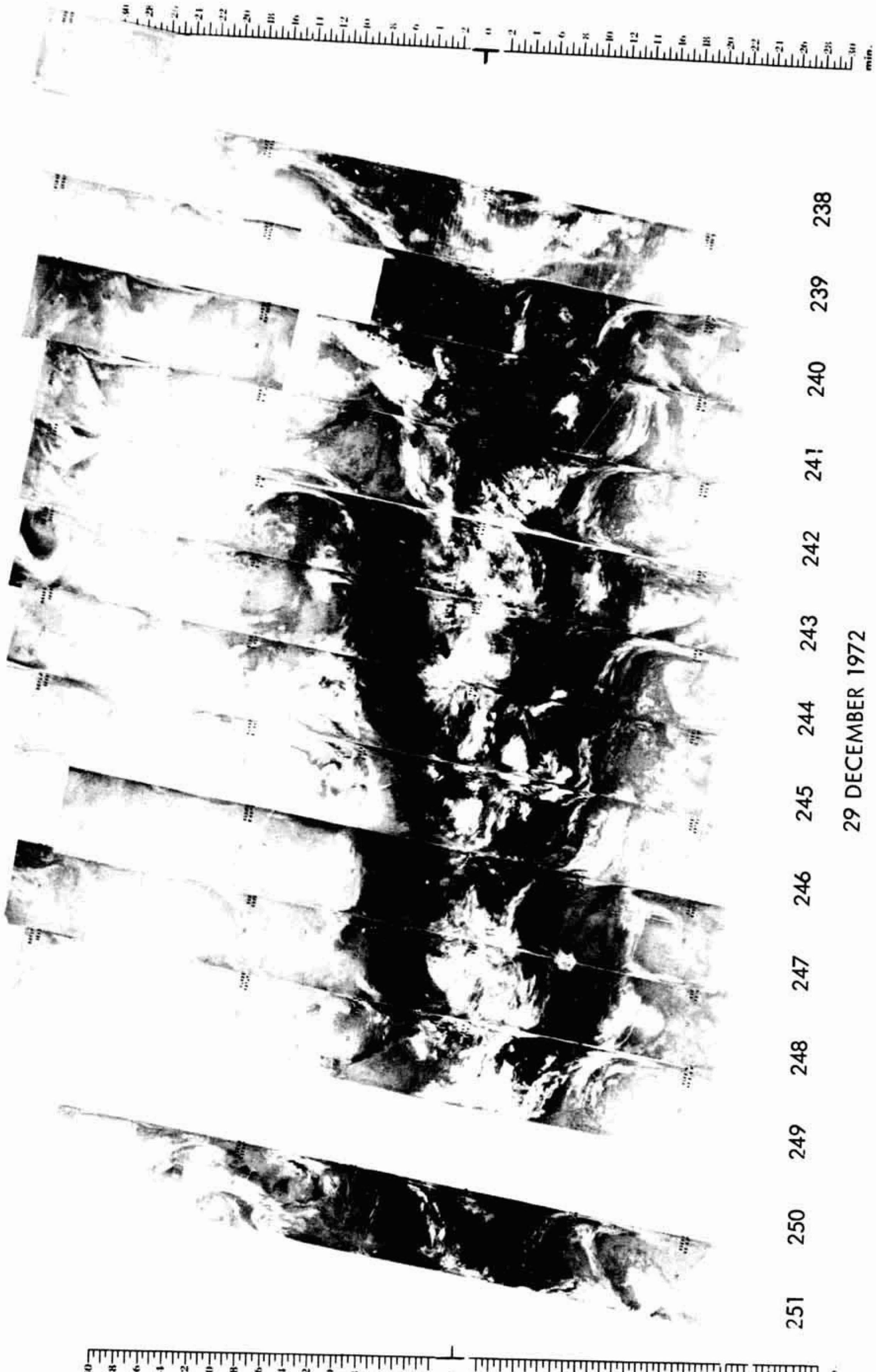
28 DECEMBER 1972

11.5 μm



28 DECEMBER 1972

6.7 μm

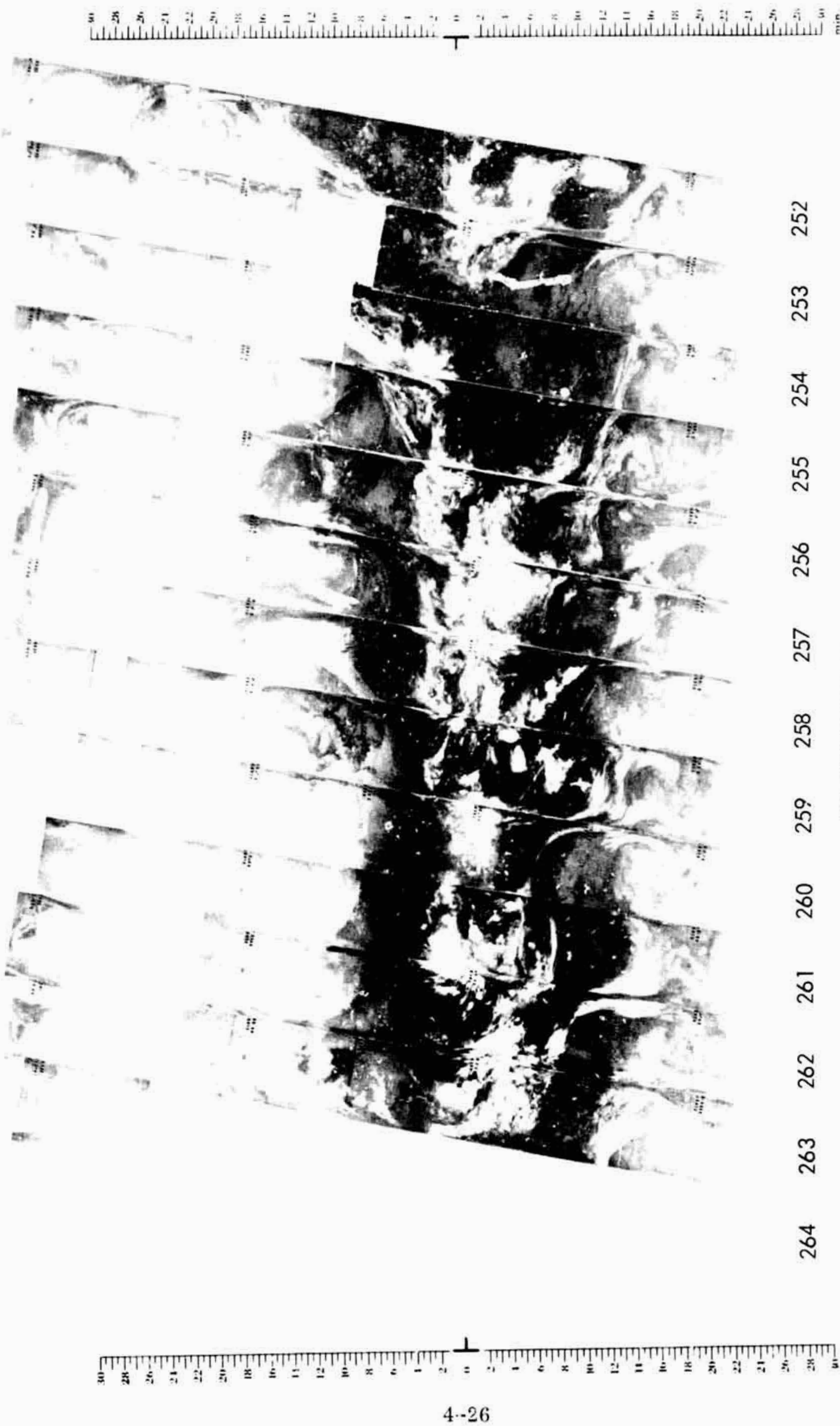


29 DECEMBER 1972

11.5 μm

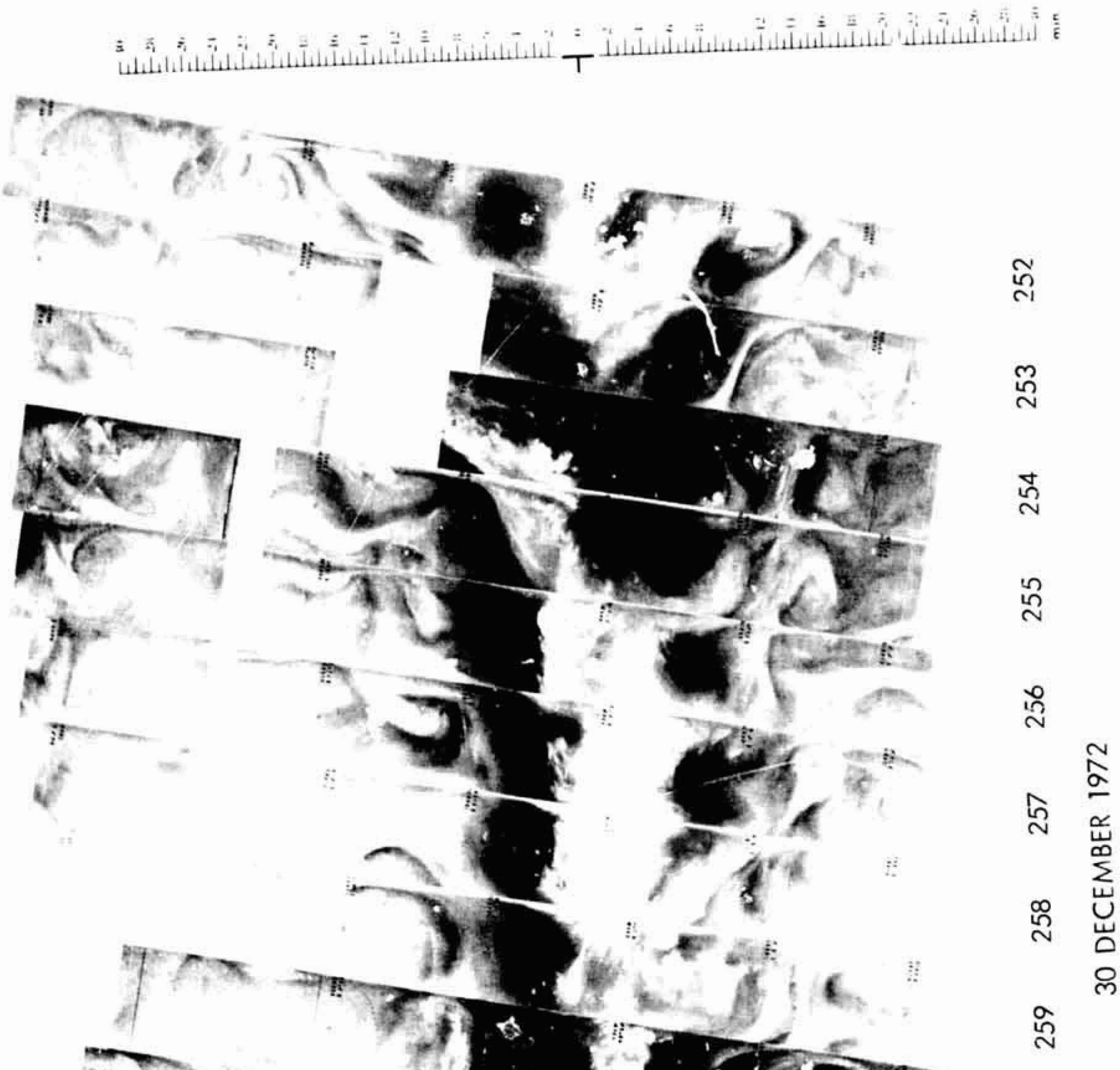
29 DECEMBER 1972

6.7 μm



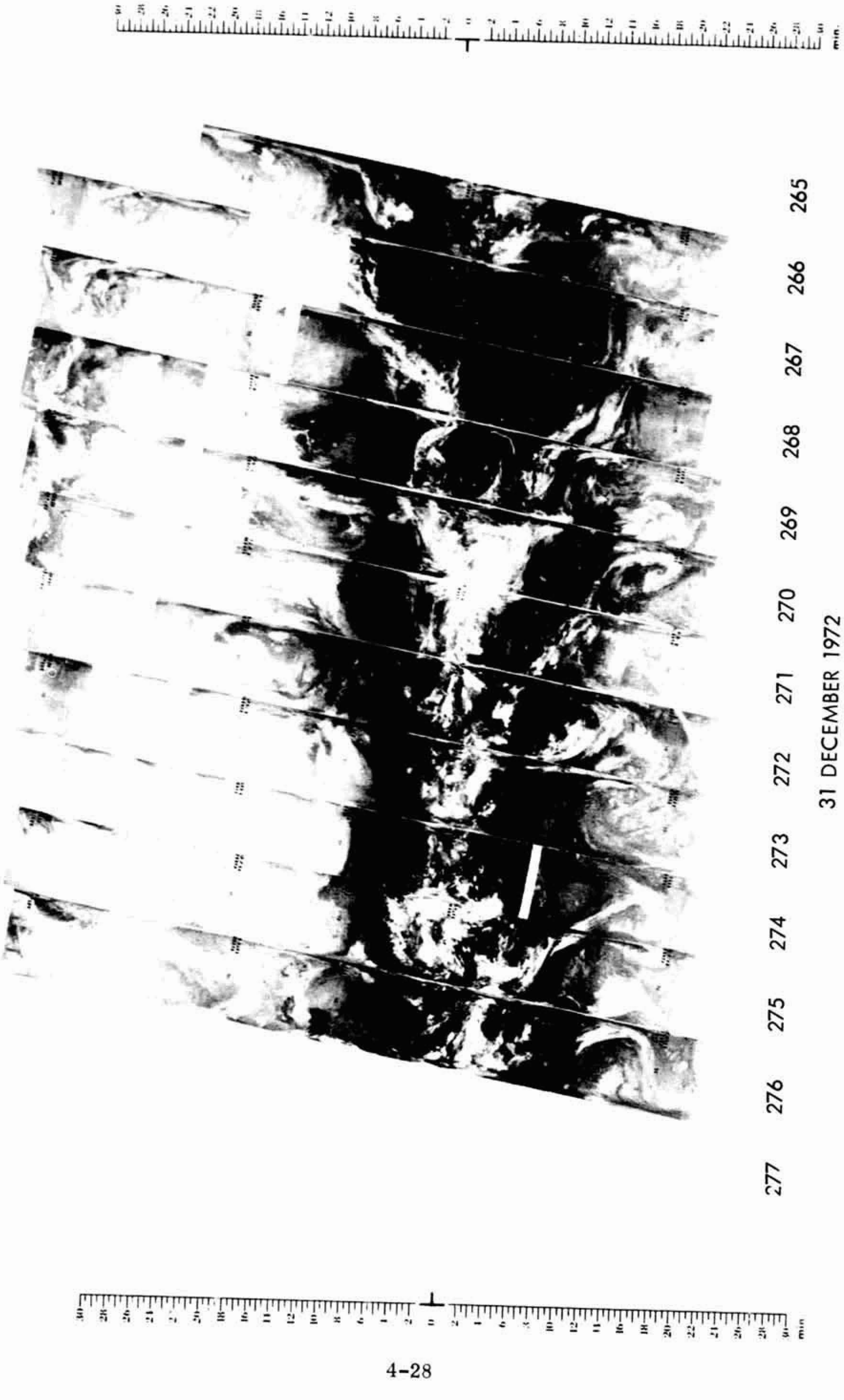
30 DECEMBER 1972

11.5 μm



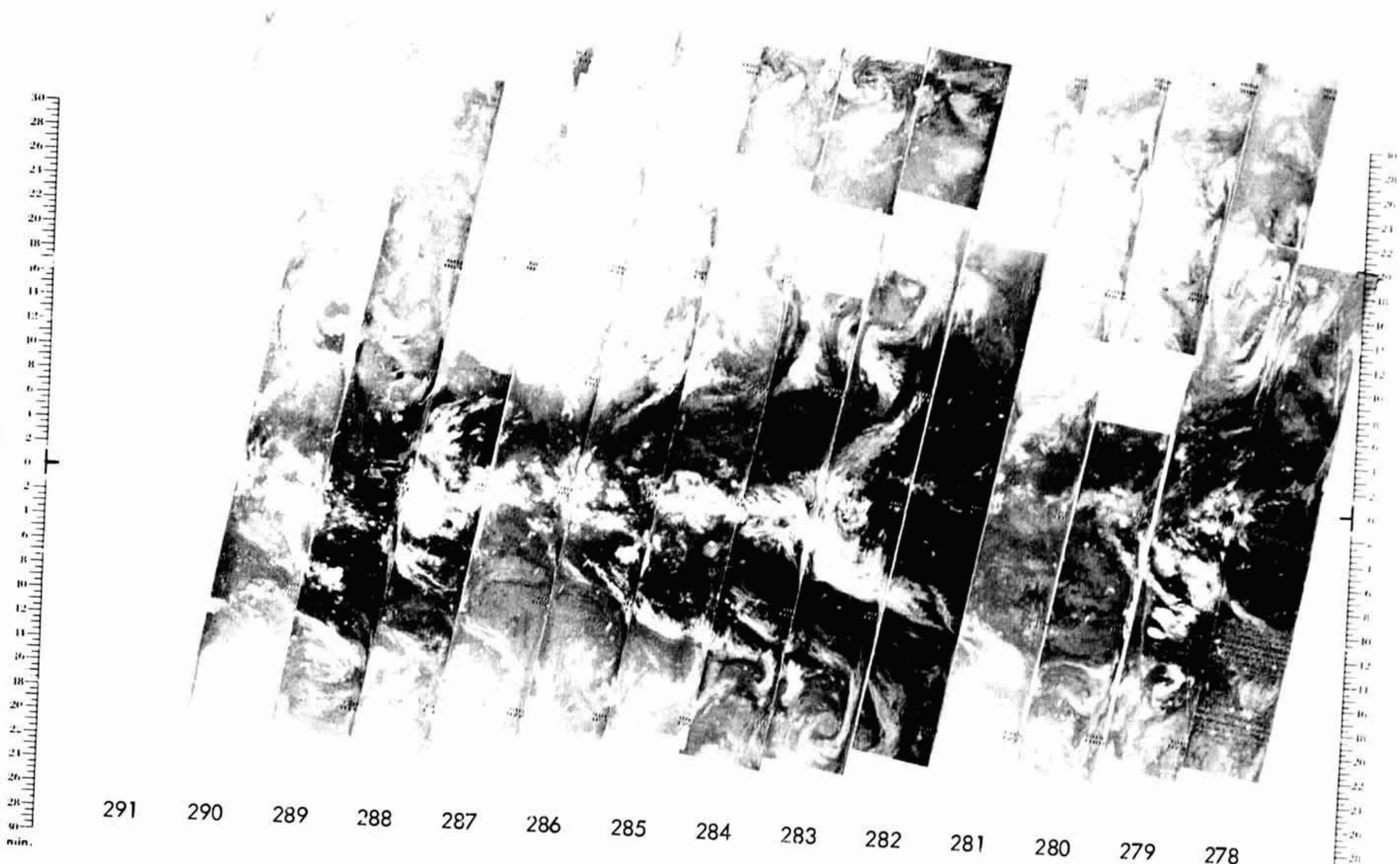
30 DECEMBER 1972

6.7 μm


265
266
267
268
269
270
271
272
273
274
275
276
277
31 DECEMBER 1972
11.5 μm
min.

31 DECEMBER 1972

6.7 μm



1 JANUARY 1973

11.5 µm

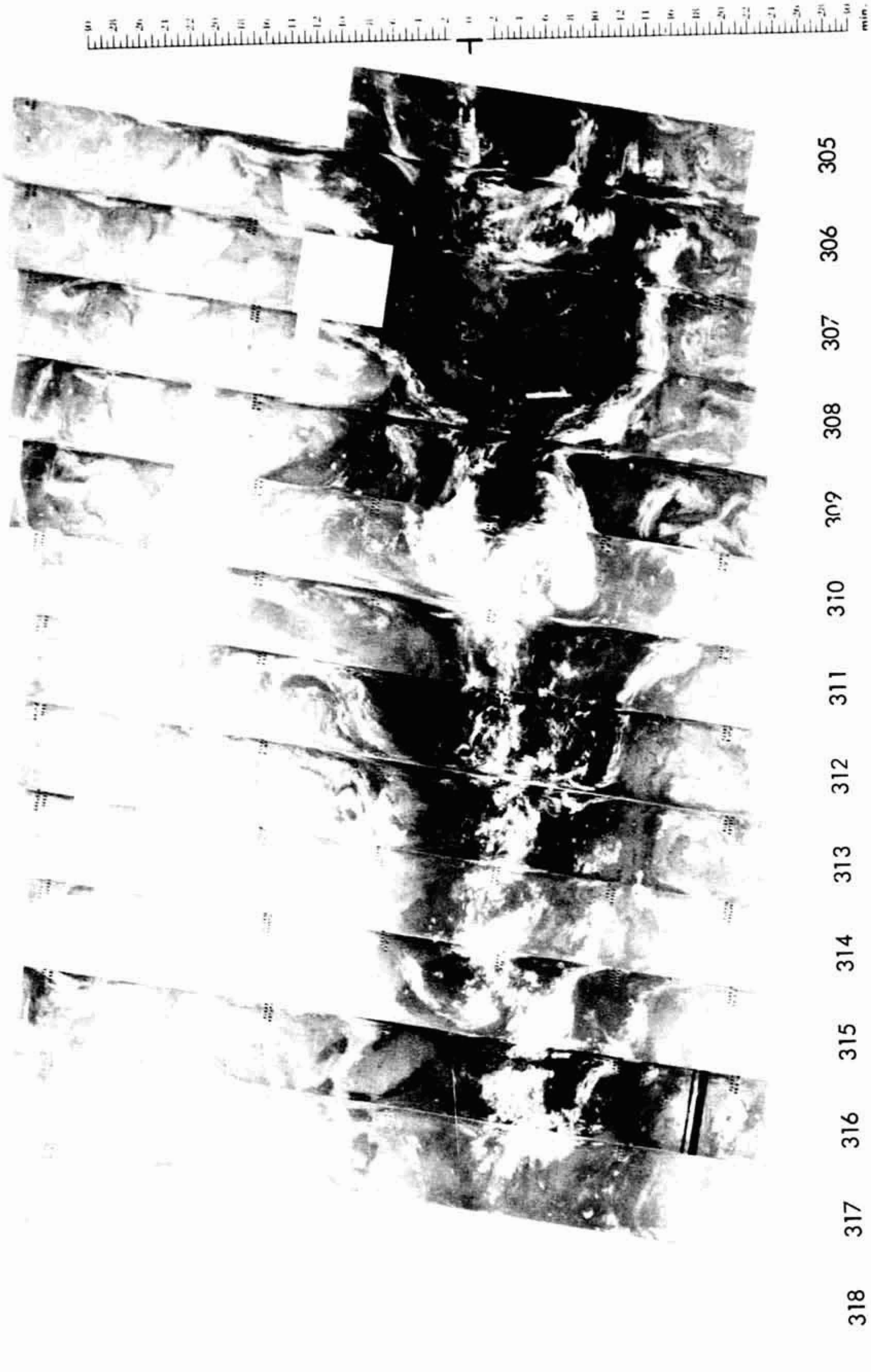

278
279
280
281
282
283
284
285
286
287
288
289
290
291
1 JANUARY 1973
6.7 μm
min.

2 JANUARY 1973

11.5 μm

2 JANUARY 1973

6.7 μm



3 JANUARY 1973

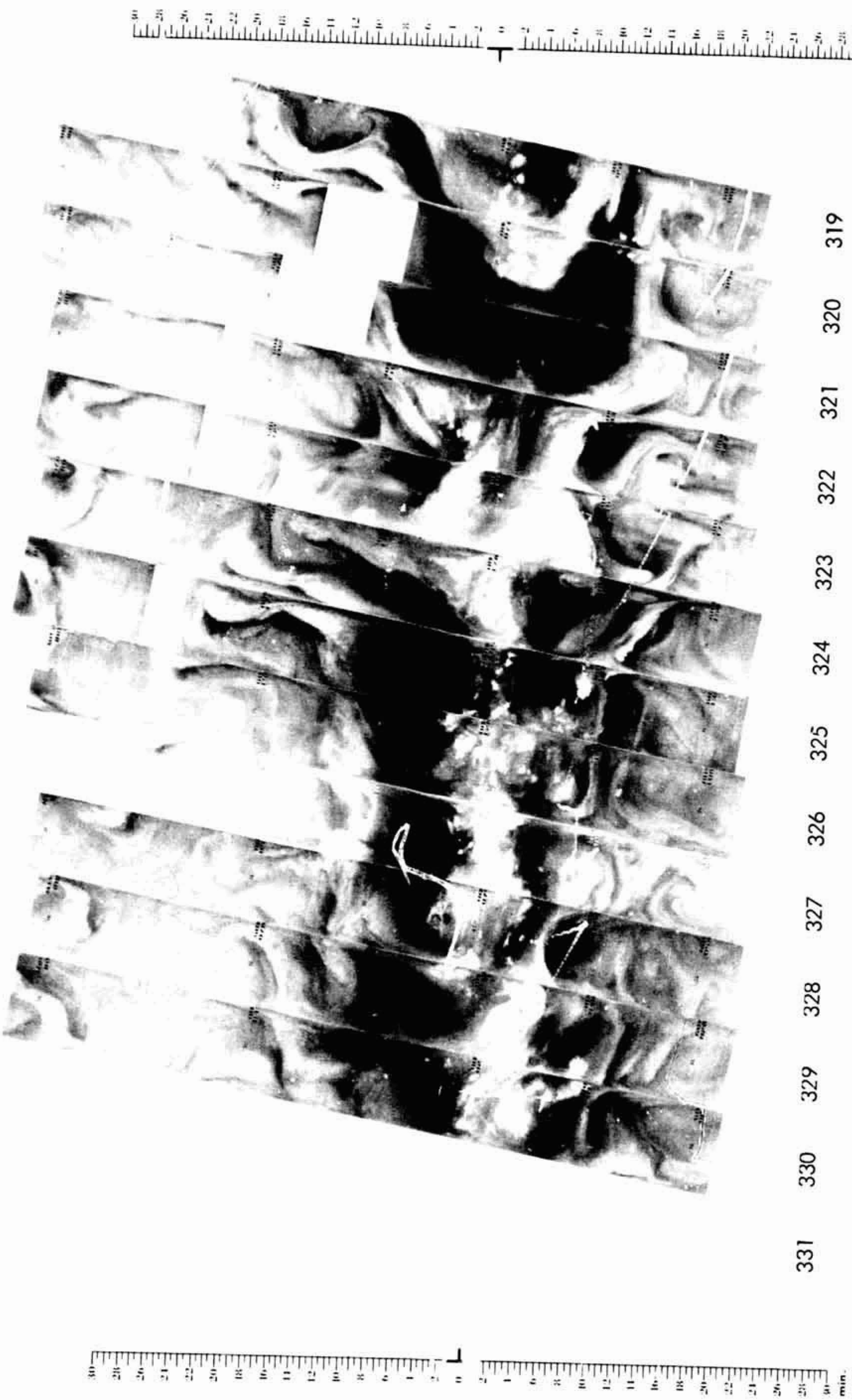
11.5 μm

3 JANUARY 1973

6.7 µm

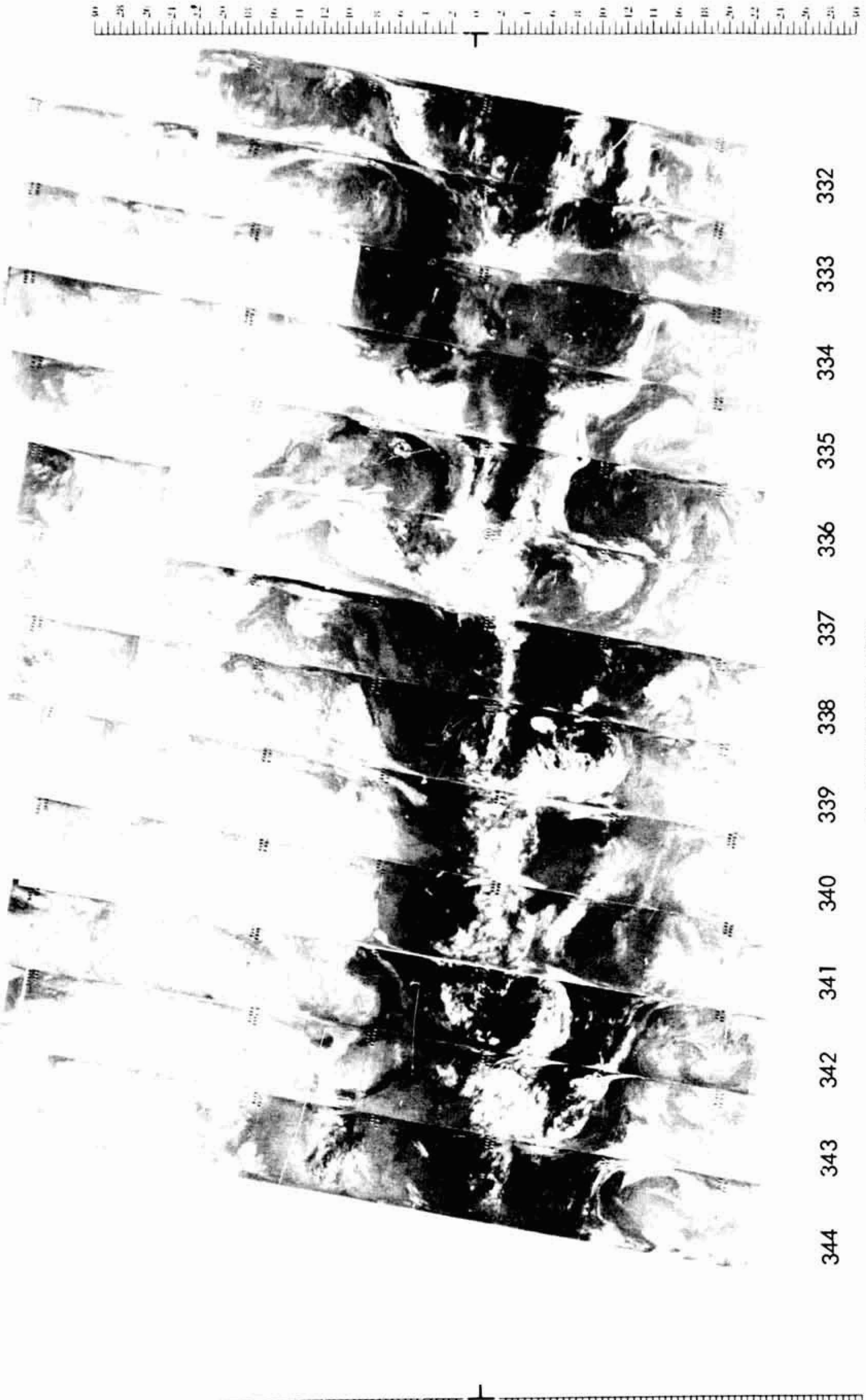
4 JANUARY 1973

11.5 μm



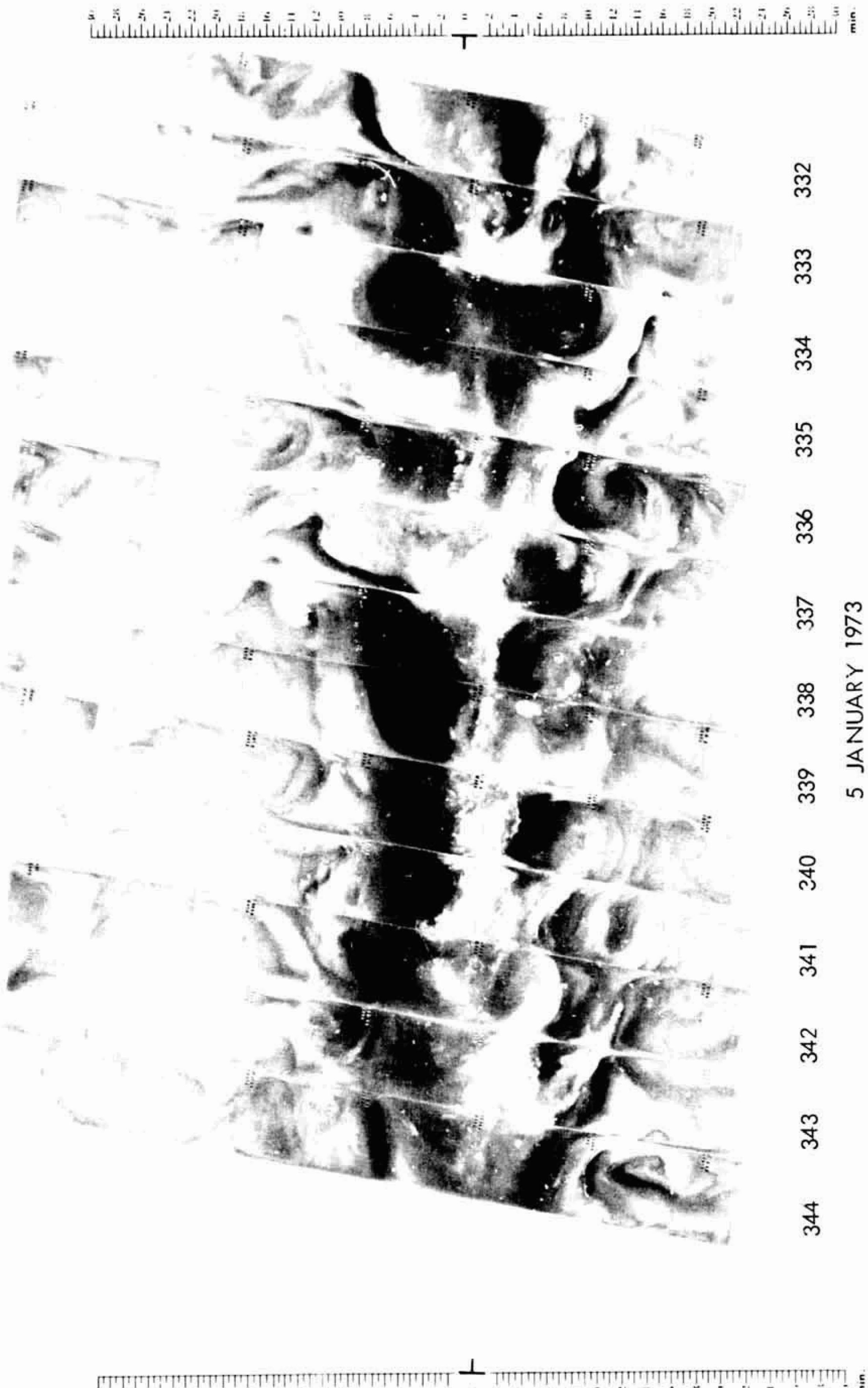
4 JANUARY 1973

6.7 μm



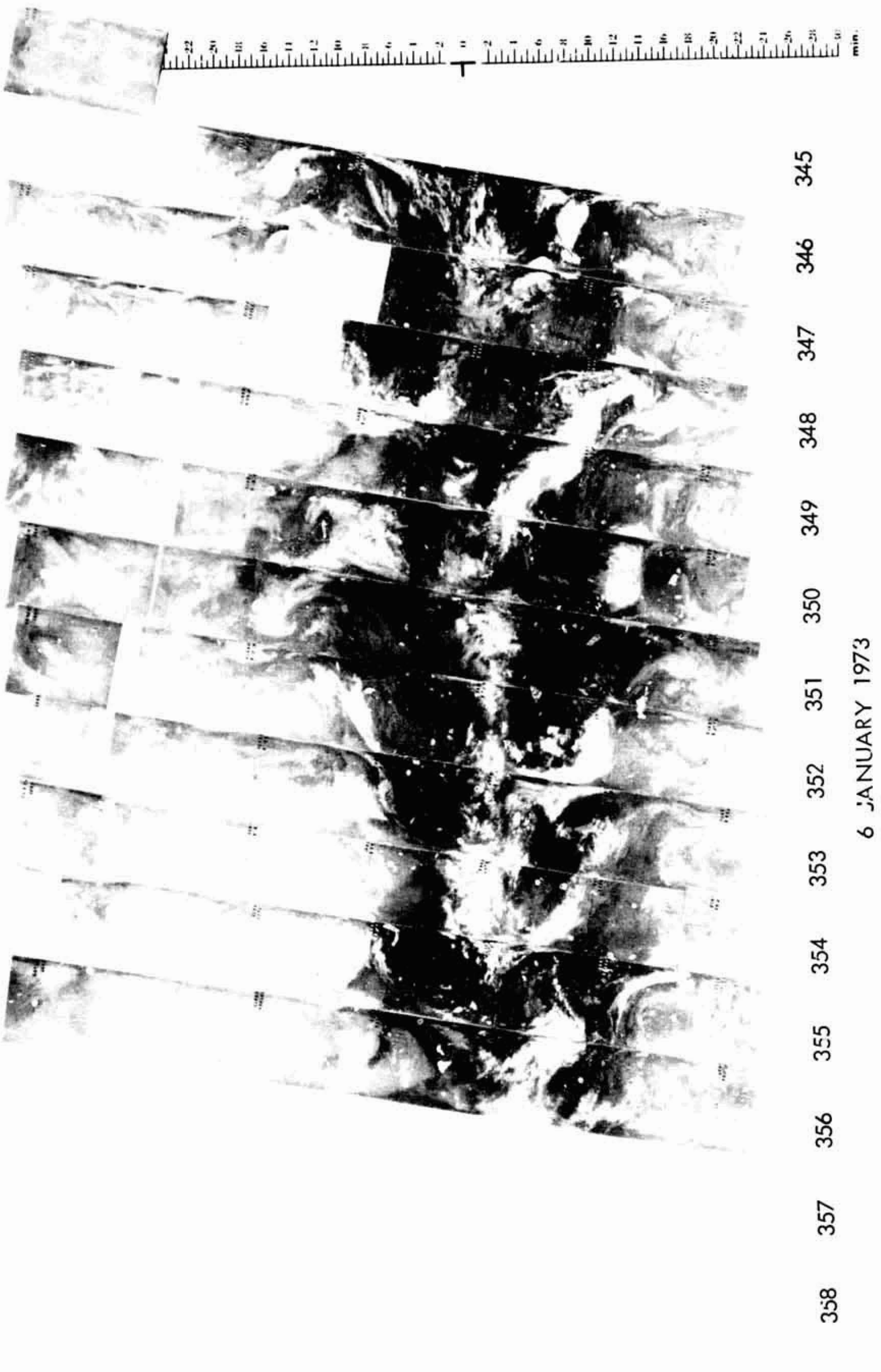
5 JANUARY 1973

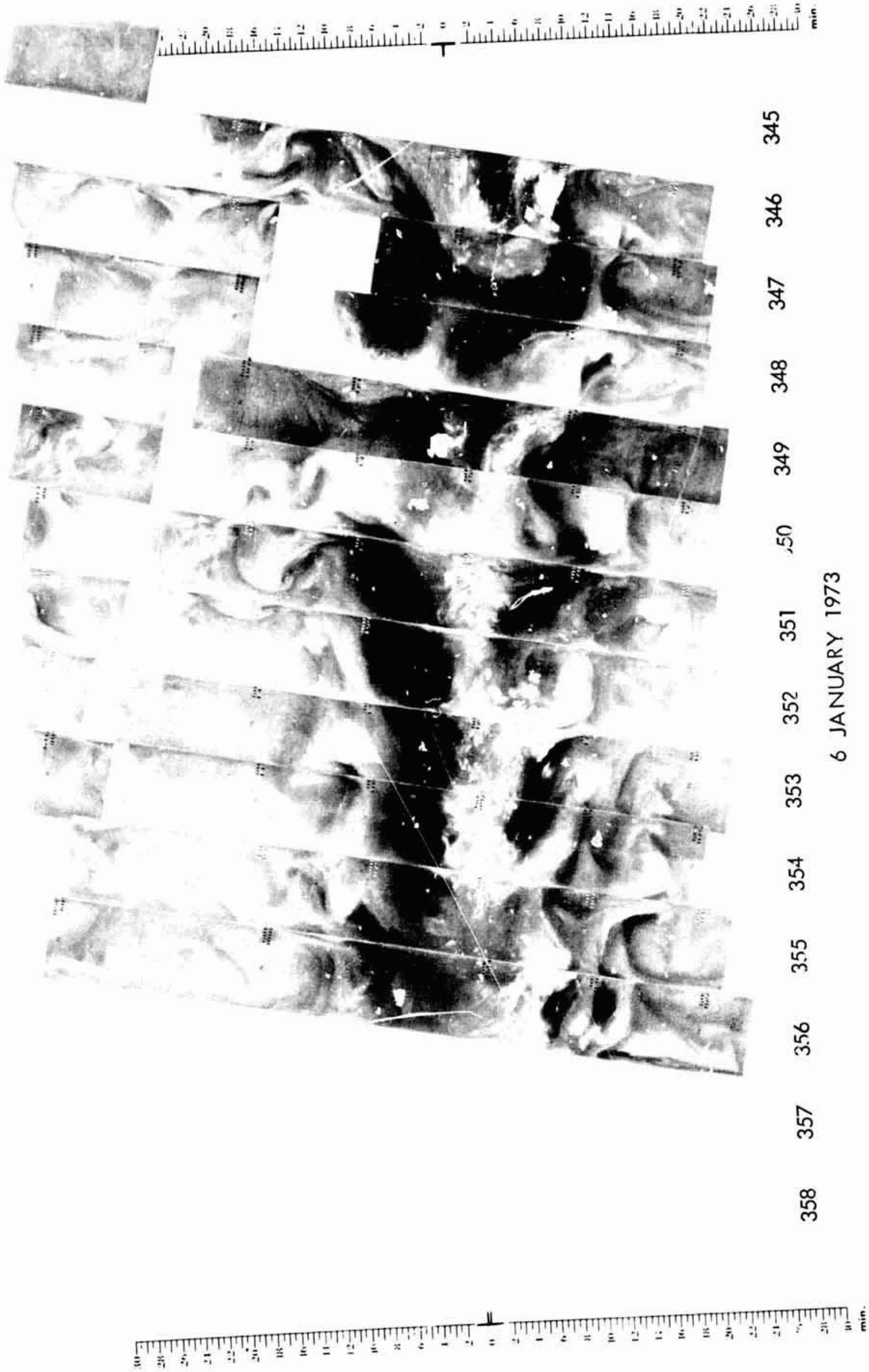
11.5 μm



5 JANUARY 1973

6.7 μm


345
346
347
348
349
350
351
352
353
354
355
356
357
358
6 JANUARY 1973
11.5 μm


345
346
347
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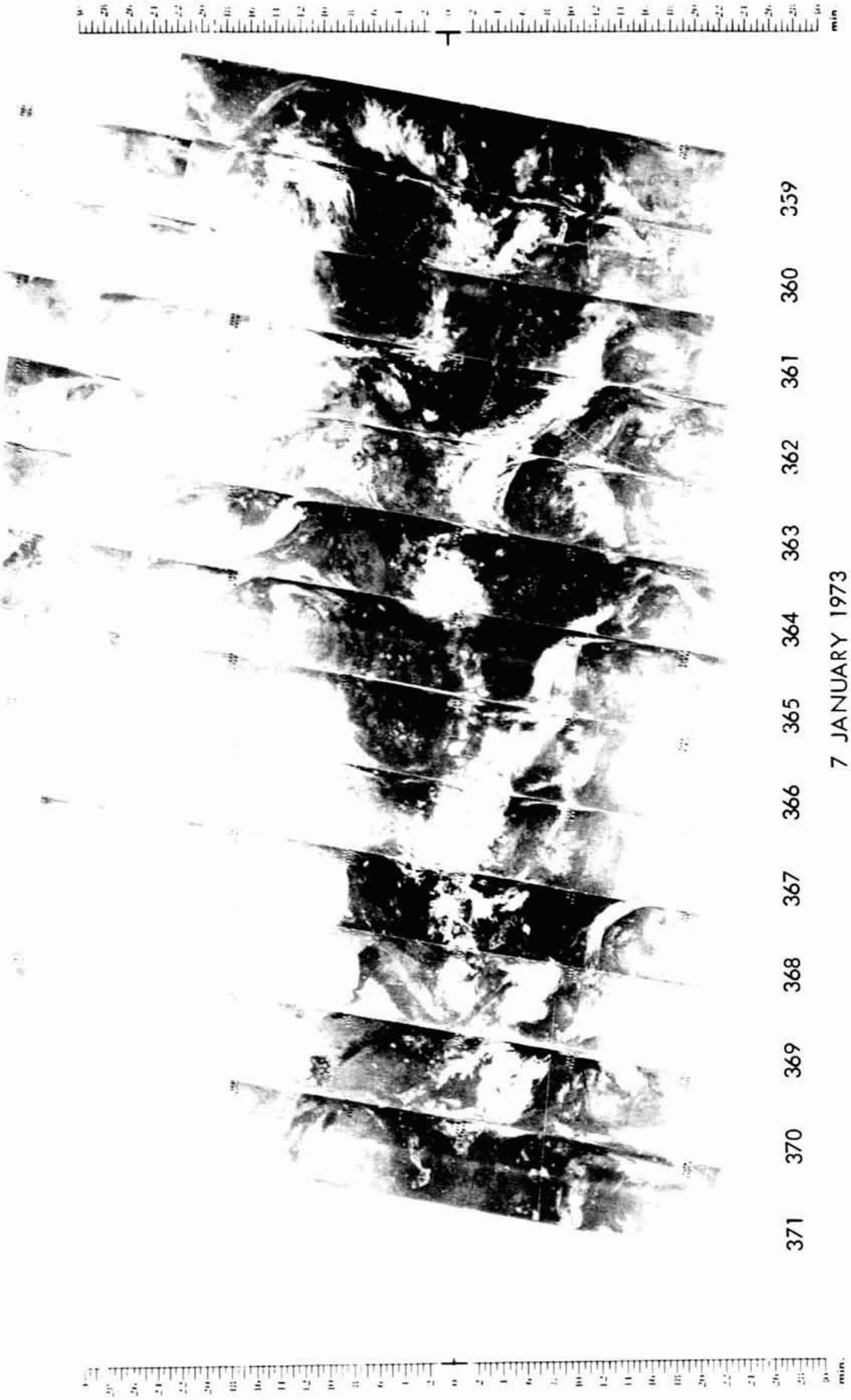
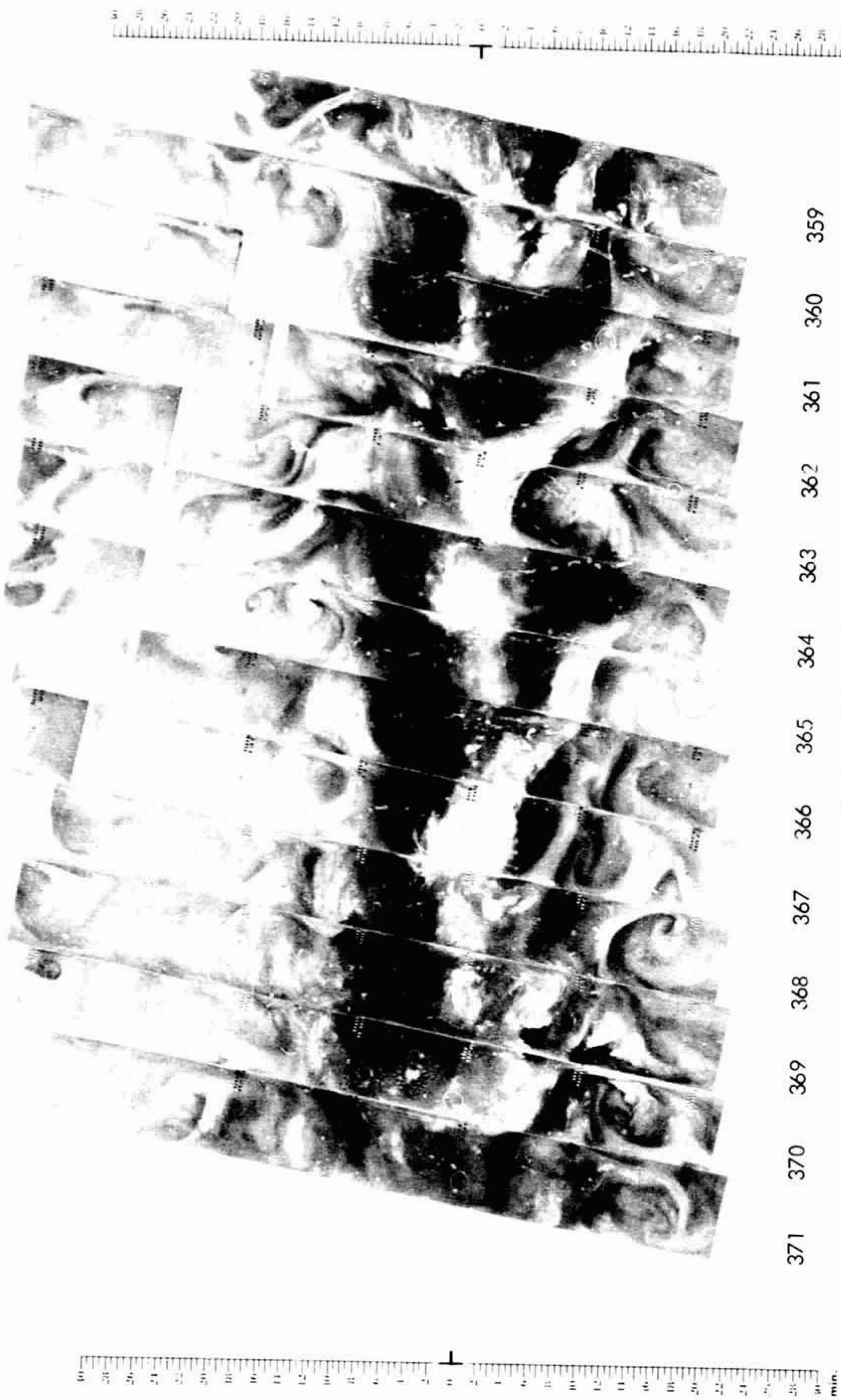
350
351
352
353
354
355
356
357
358
6 JANUARY 1973
6.7 μm
min.
min.



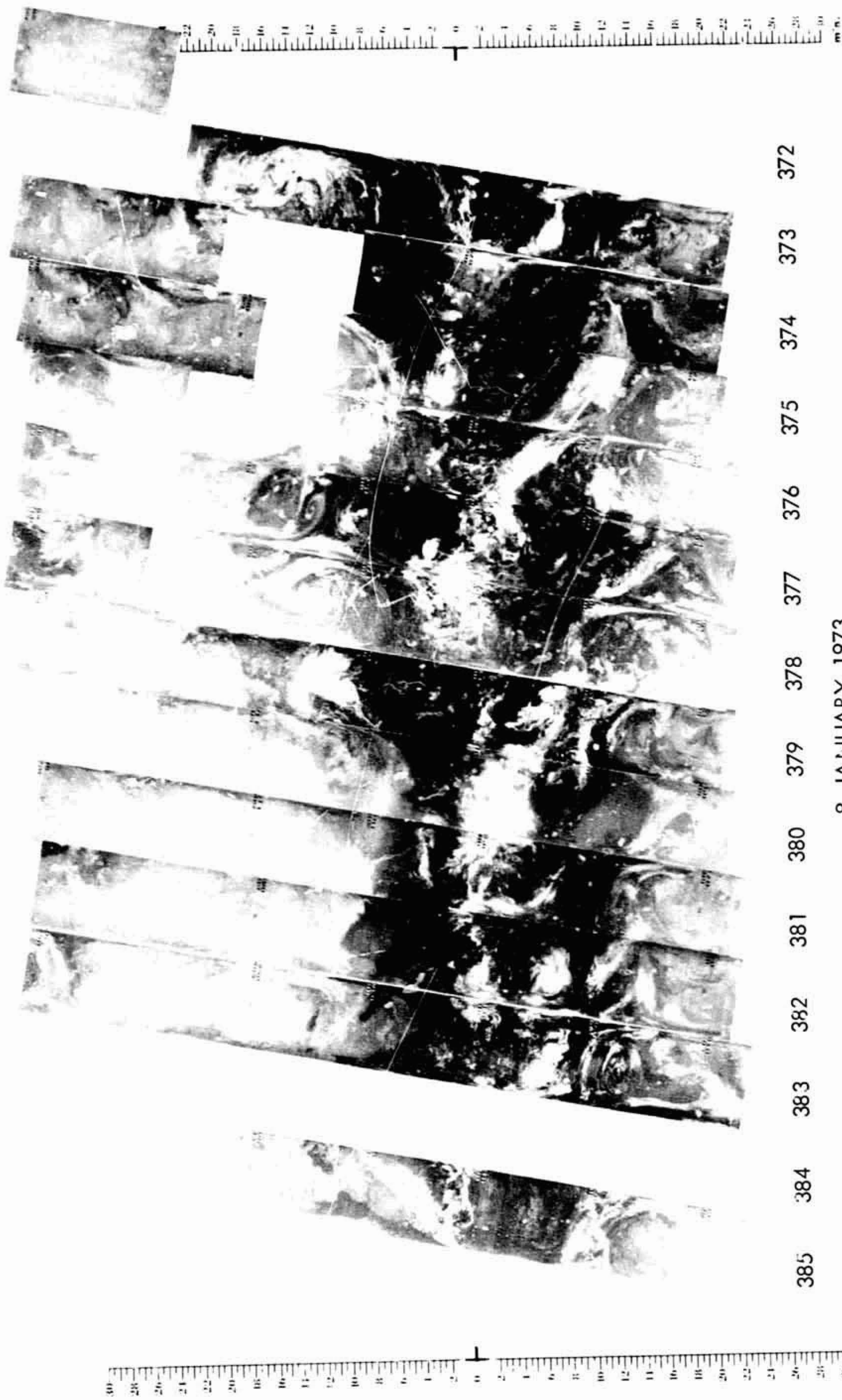
7 JANUARY 1973

11.5 µm



7 JANUARY 1973

6.7 μm

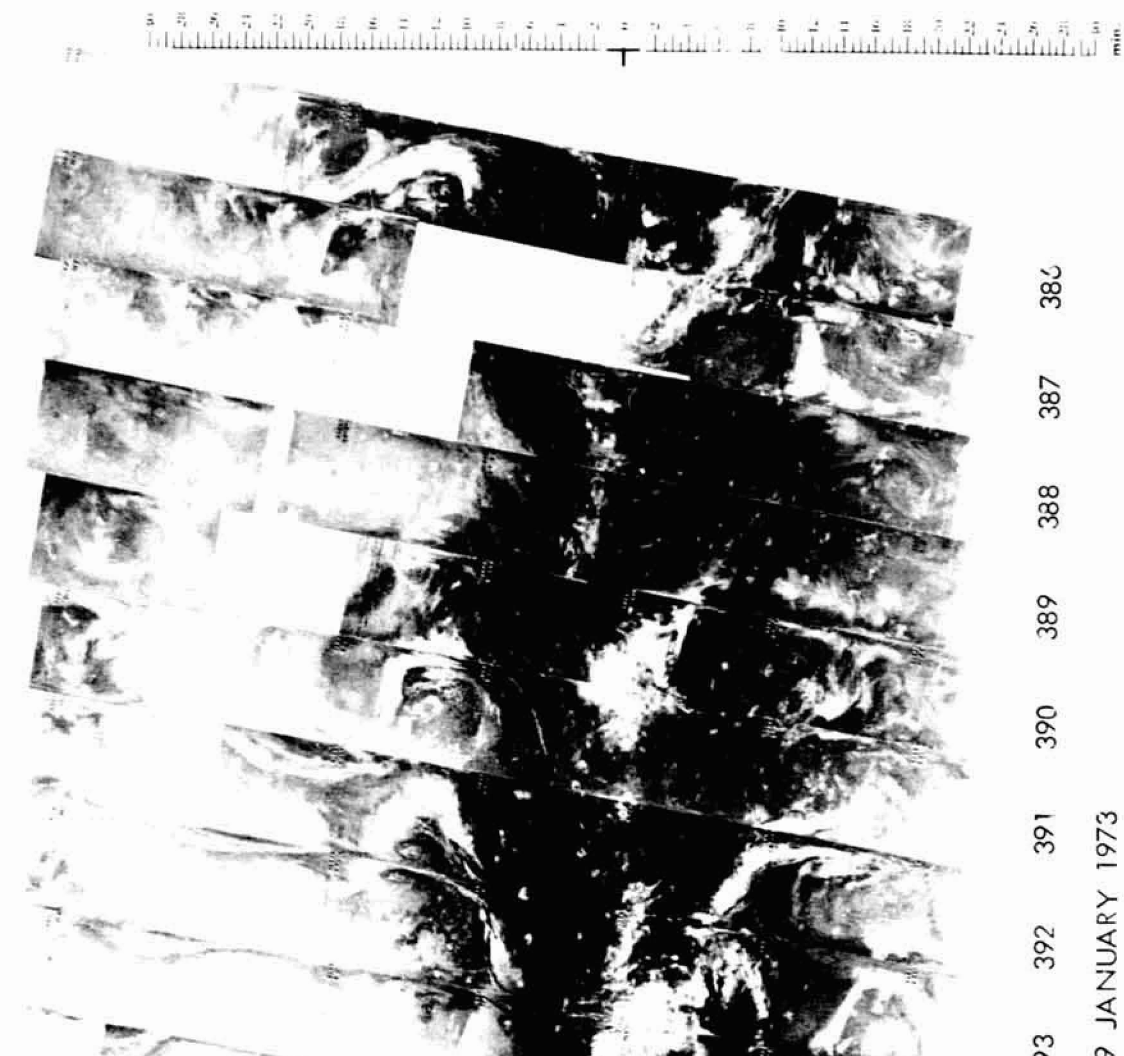


8 JANUARY 1973

11.5 µm

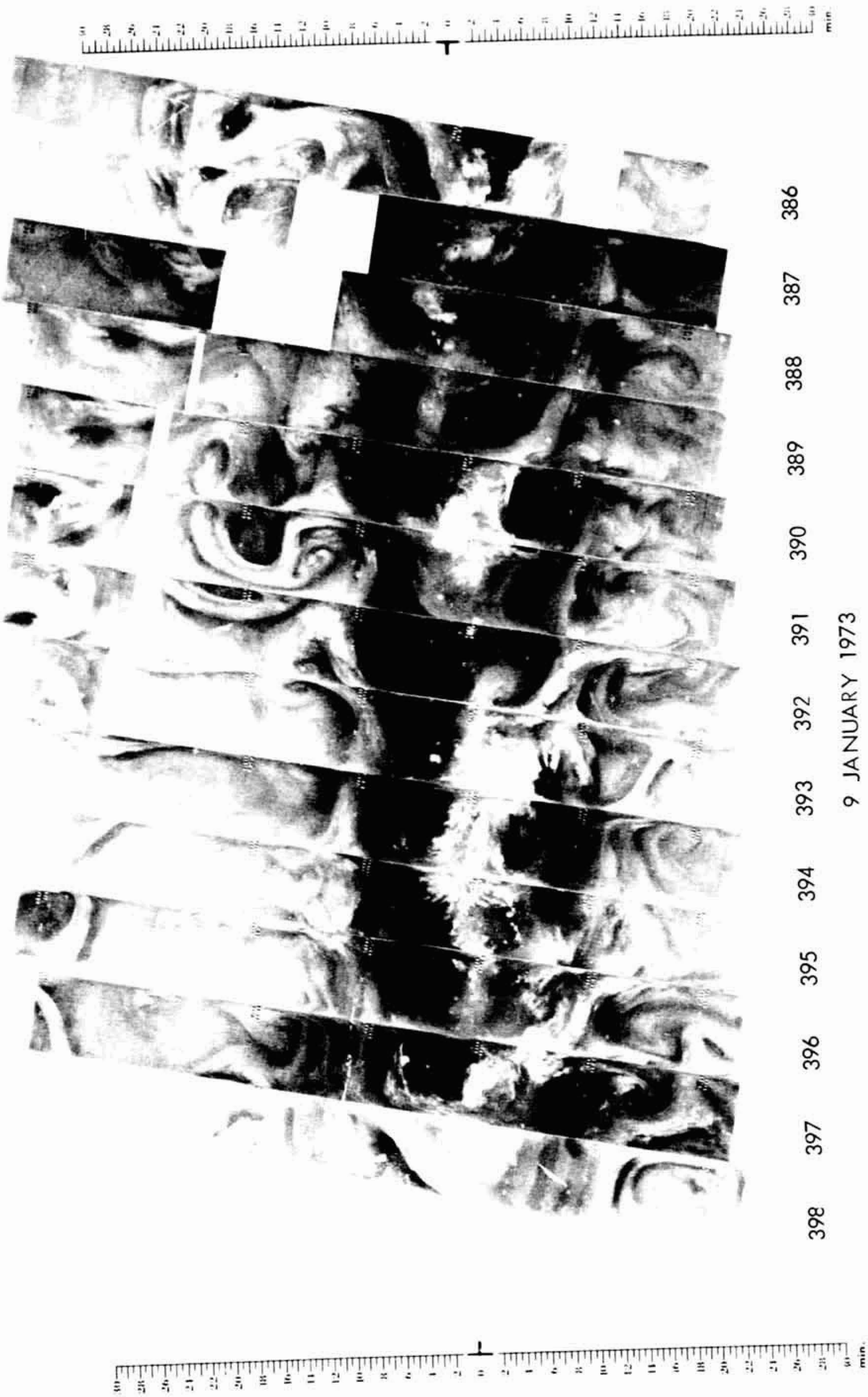
8 JANUARY 1973

6.7 μm



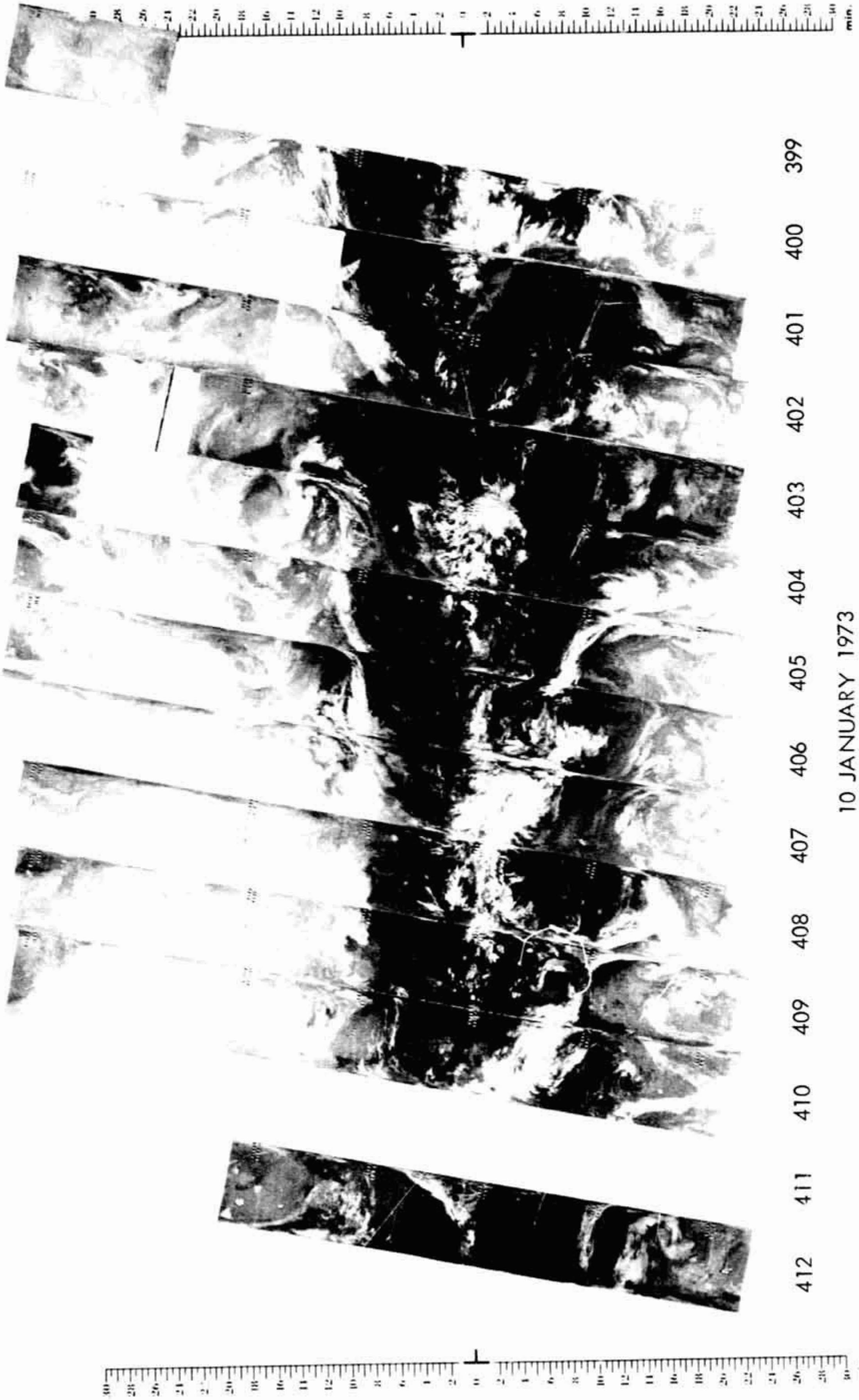
9 JANUARY 1973

11.5 µm



9 JANUARY 1973

6.7 μm

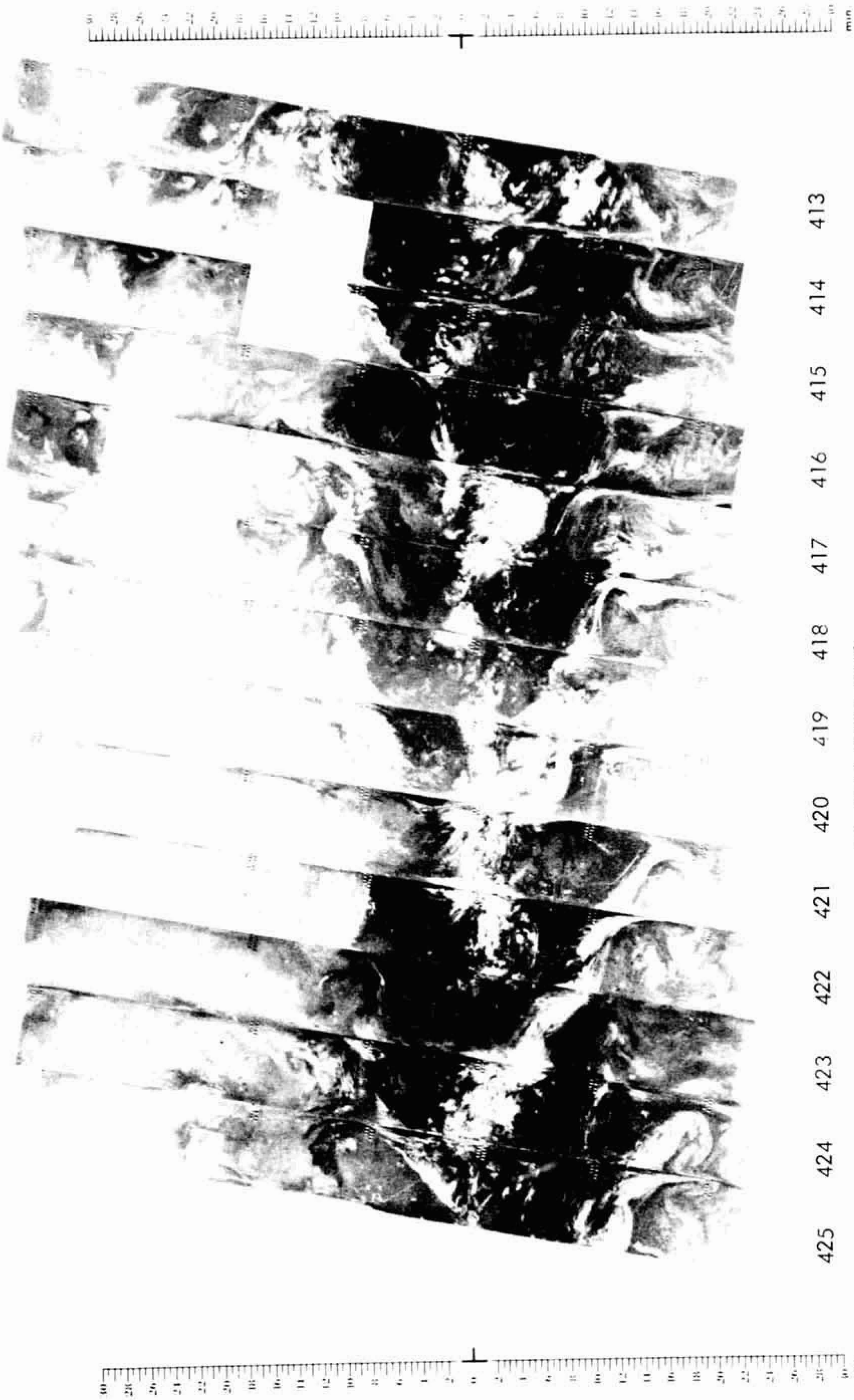


10 JANUARY 1973

11.5 μm

10 JANUARY 1973

6.7 μm



11 JANUARY 1973

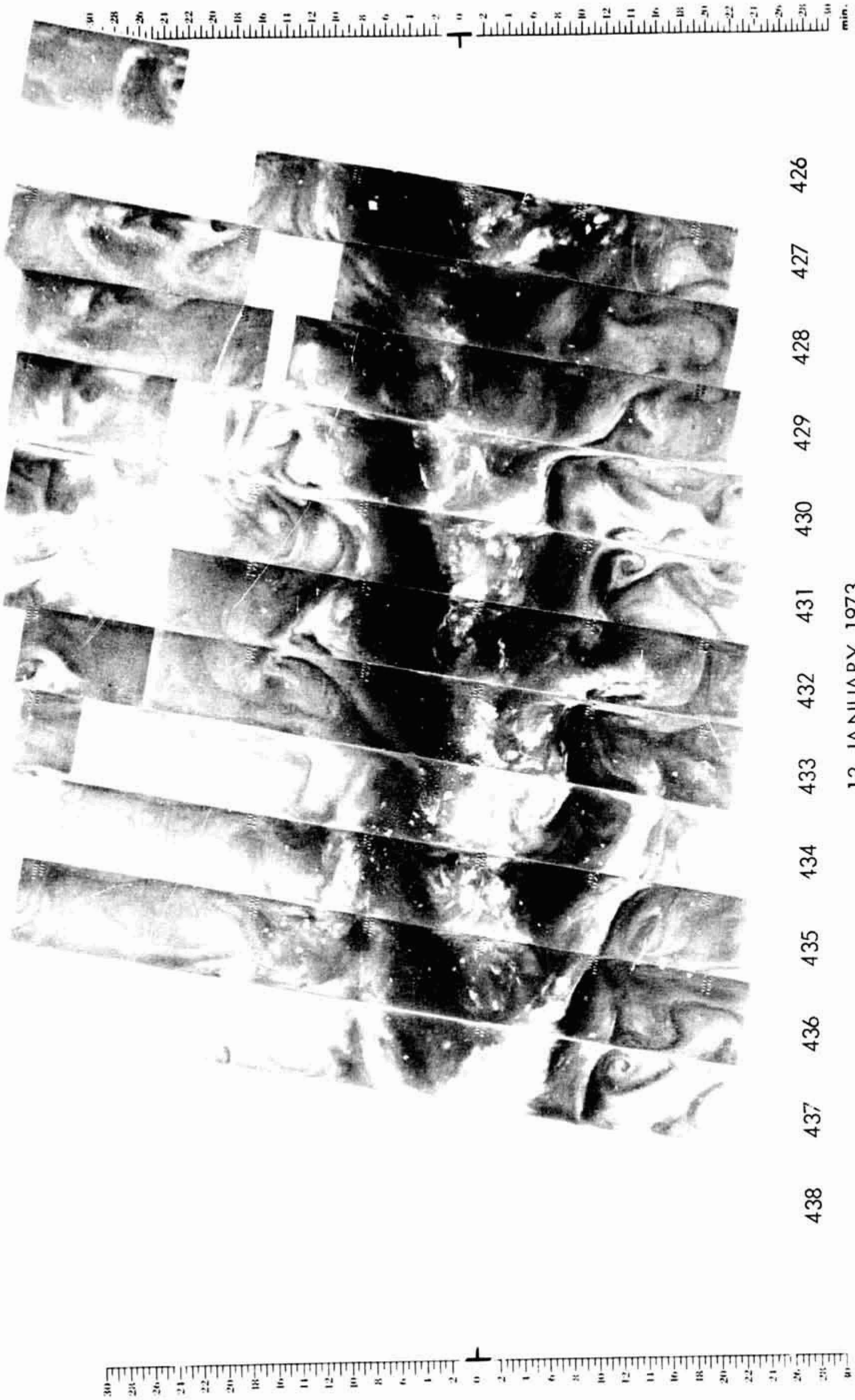
11.5 μm

11 JANUARY 1973

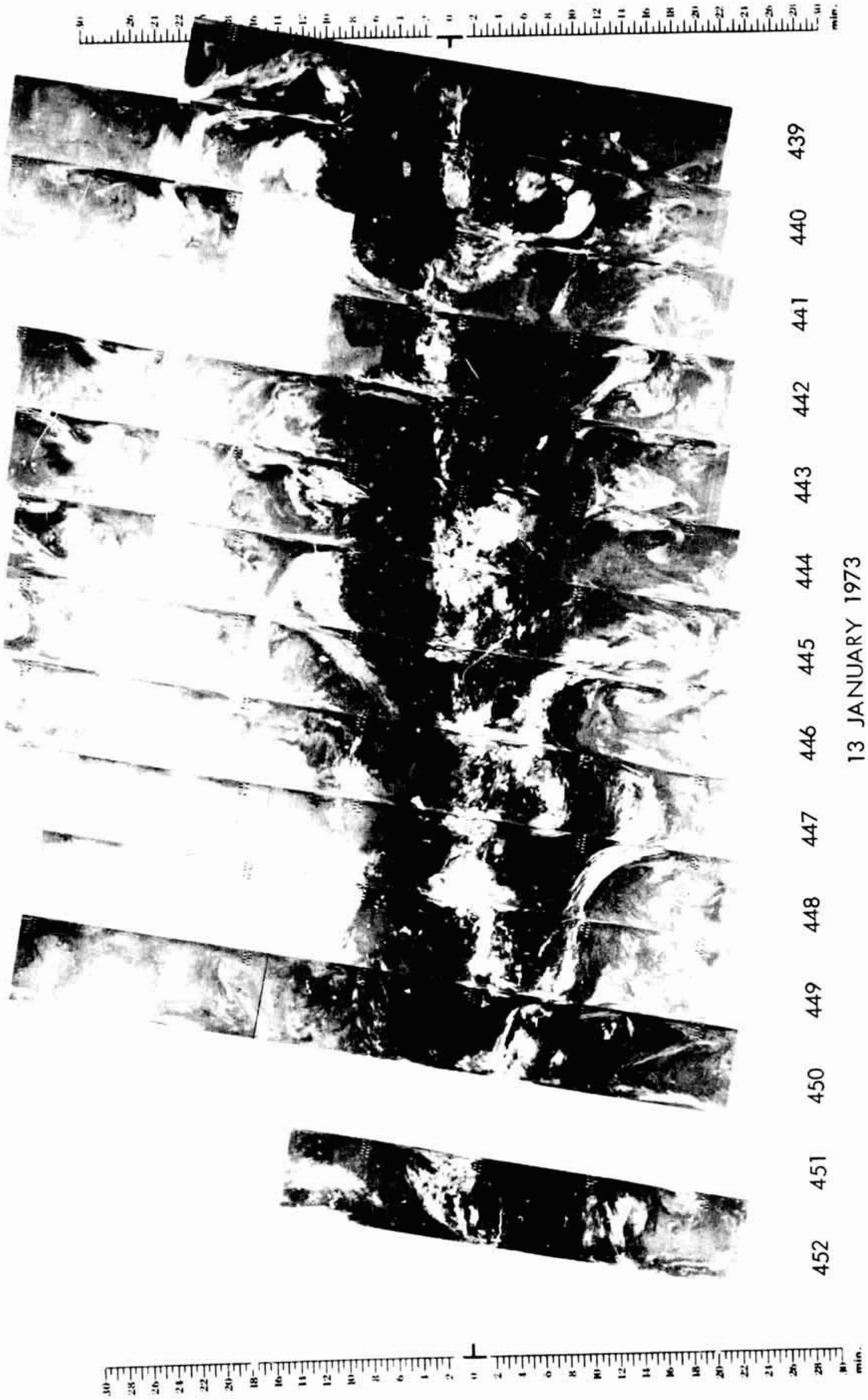
6.7 μm

12 JANUARY 1973

11.5 μm

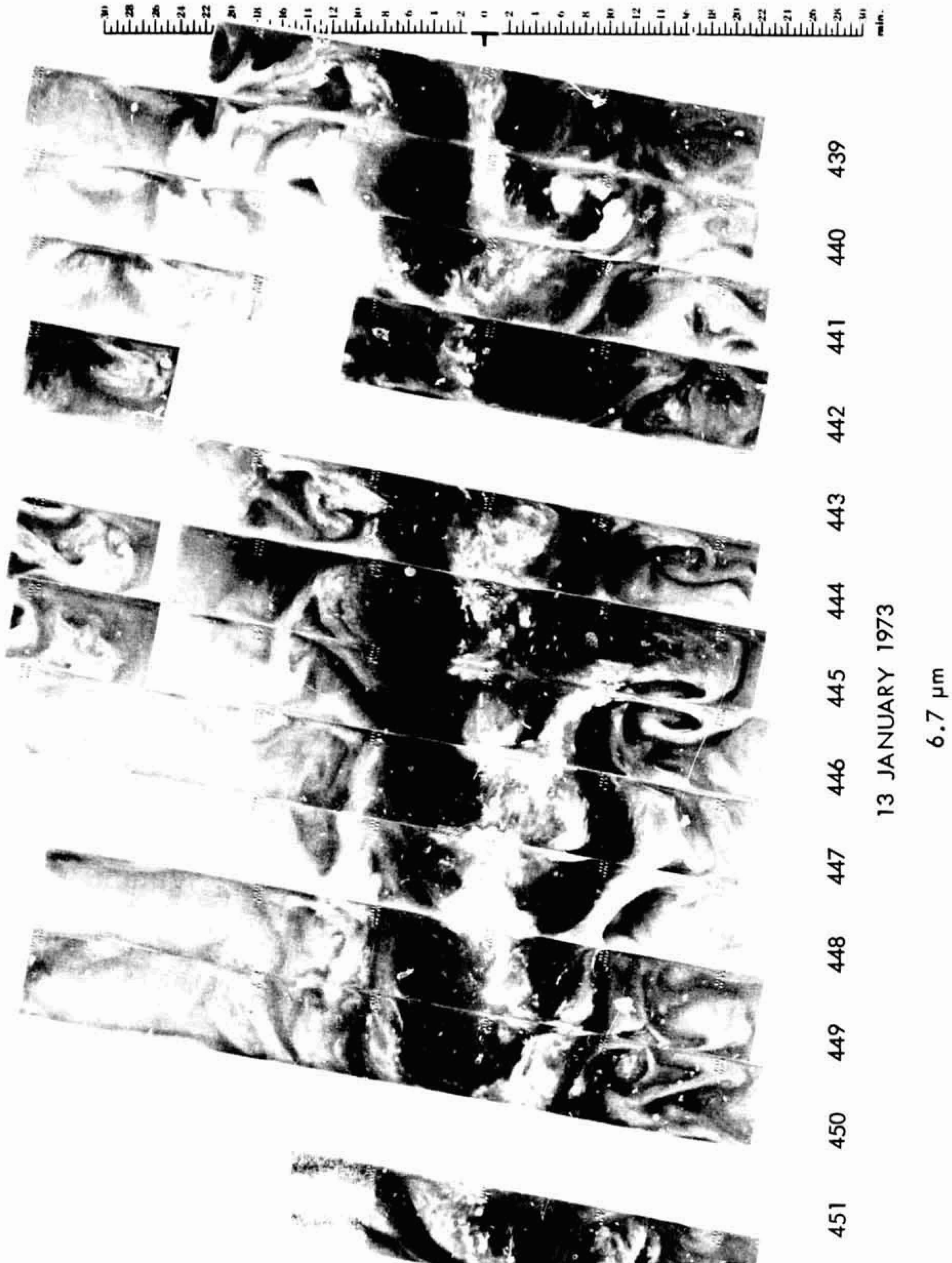


12 JANUARY 1973
6.7 µm



13 JANUARY 1973

11.5 µm



439
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445
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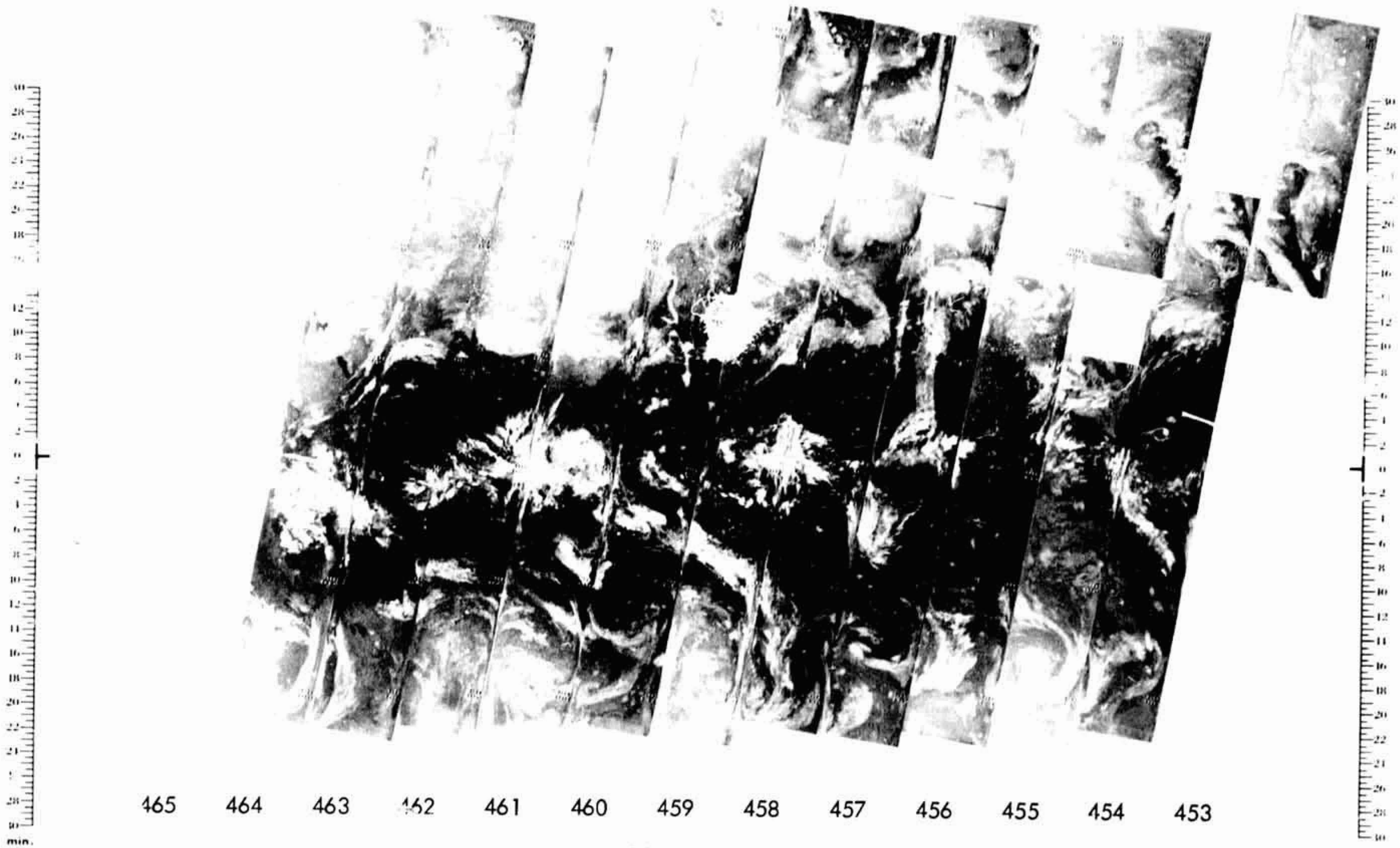
447
448
449
450
451
452
13 JANUARY 1973
6.7 μm
min.

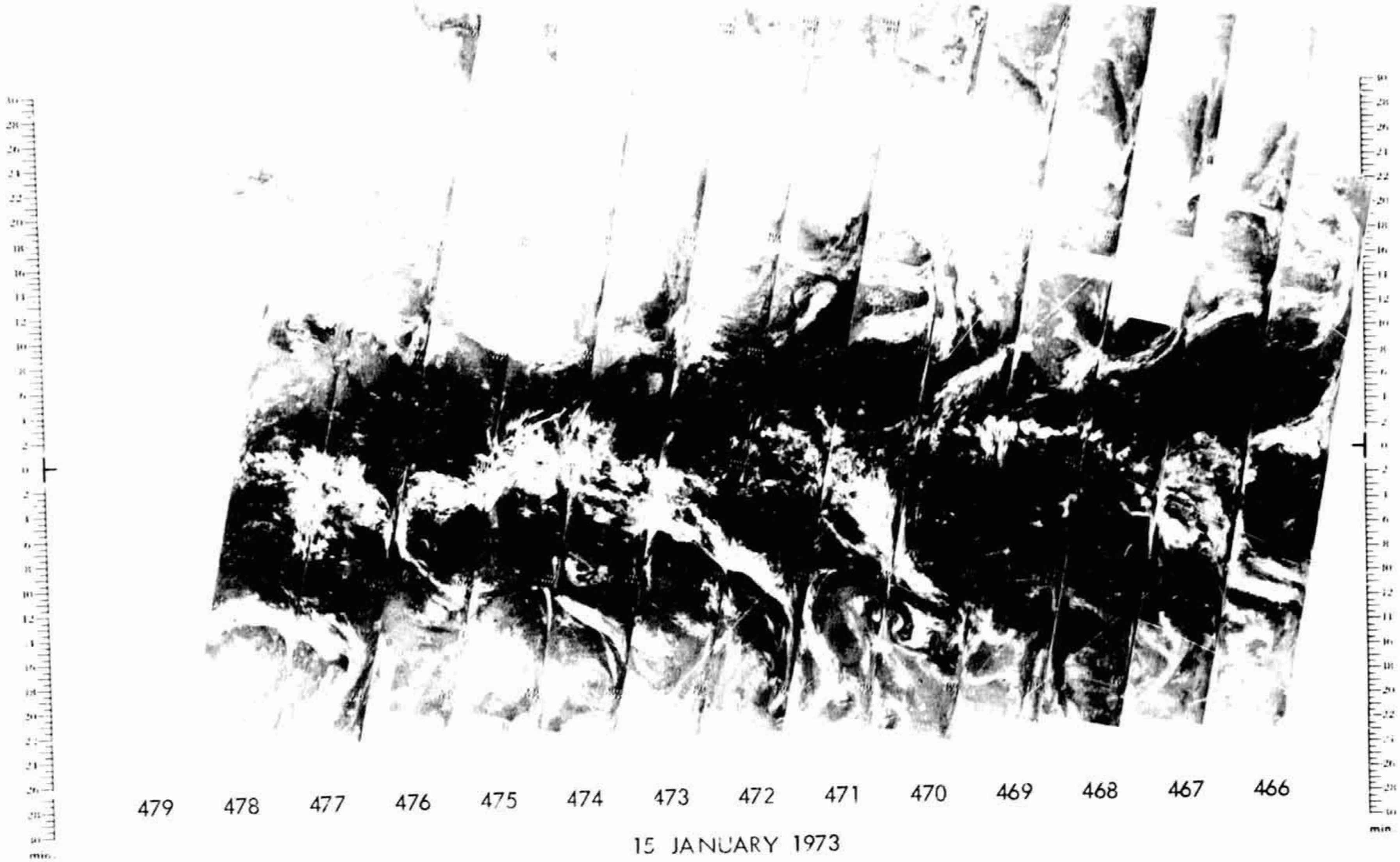


14 JANUARY 1973

11.5 μm

14 JANUARY 1973

6.7 μm

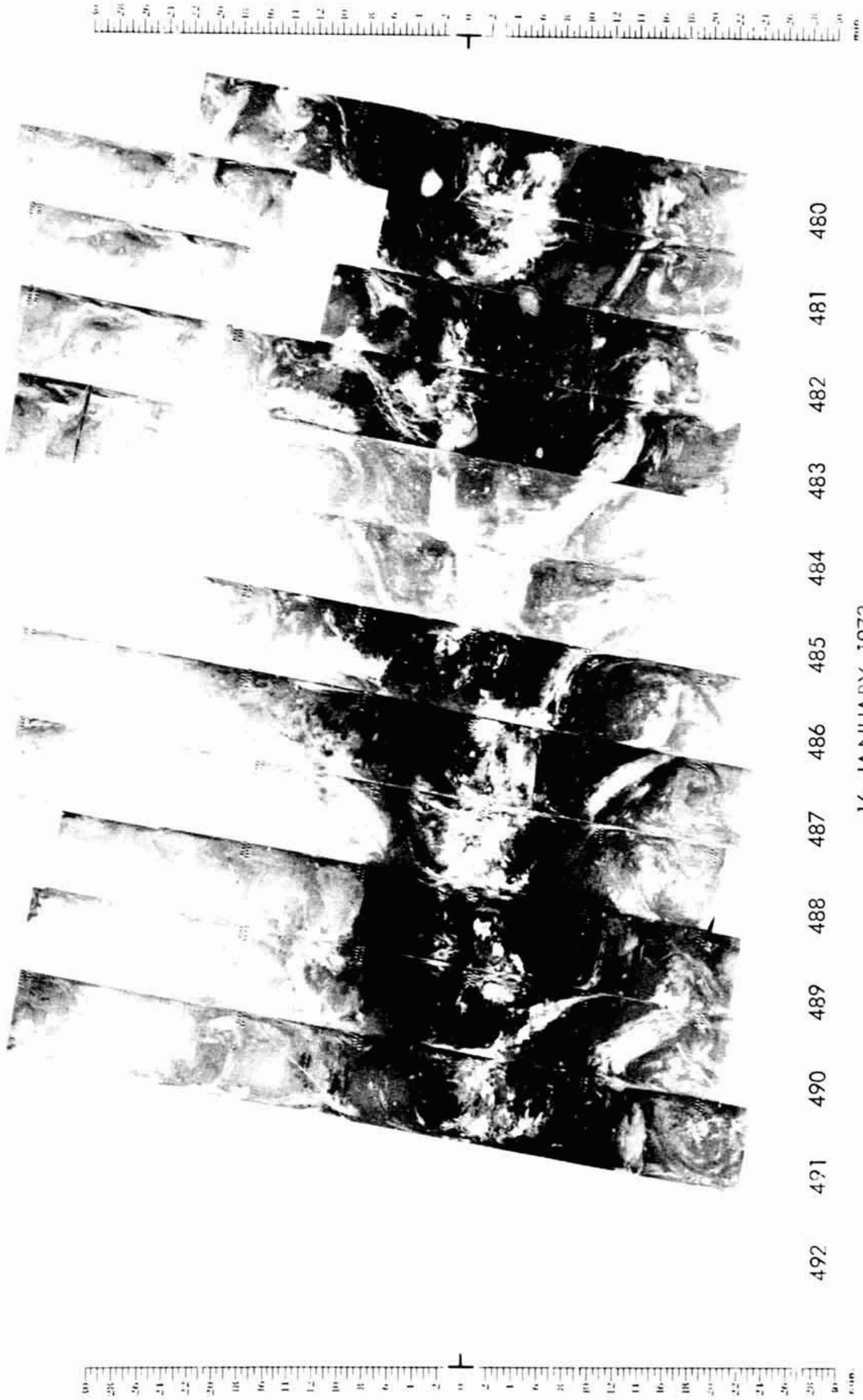


15 JANUARY 1973

11.5 μm

15 JANUARY 1973

6.7 μm

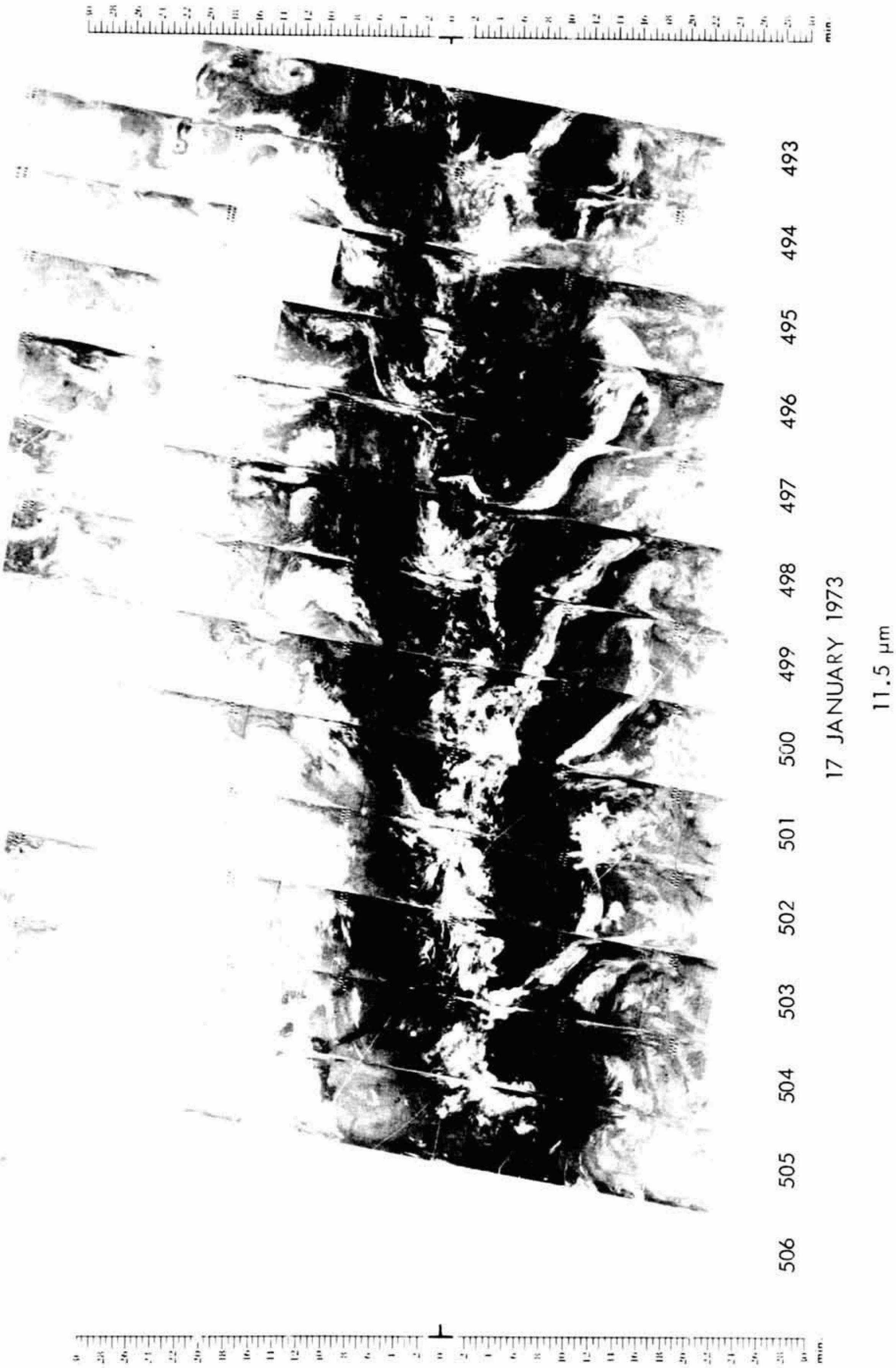


16 JANUARY 1973

11.5 μm

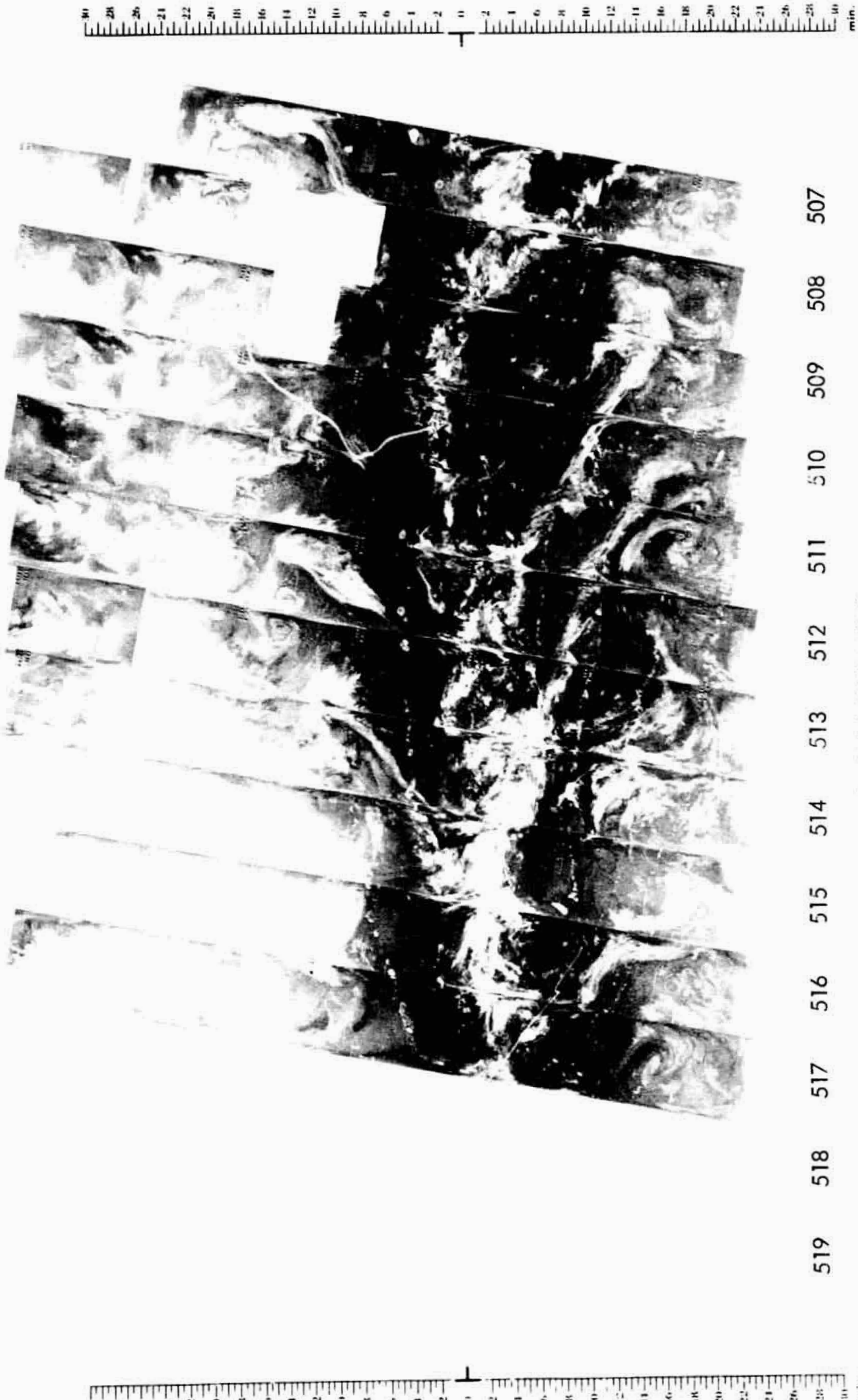
16 JANUARY 1973

6.7 µm


493
494
495
496
497
498
499
500
501
502
503
504
505
506
17 JANUARY 1973
11.5 μm
min
min

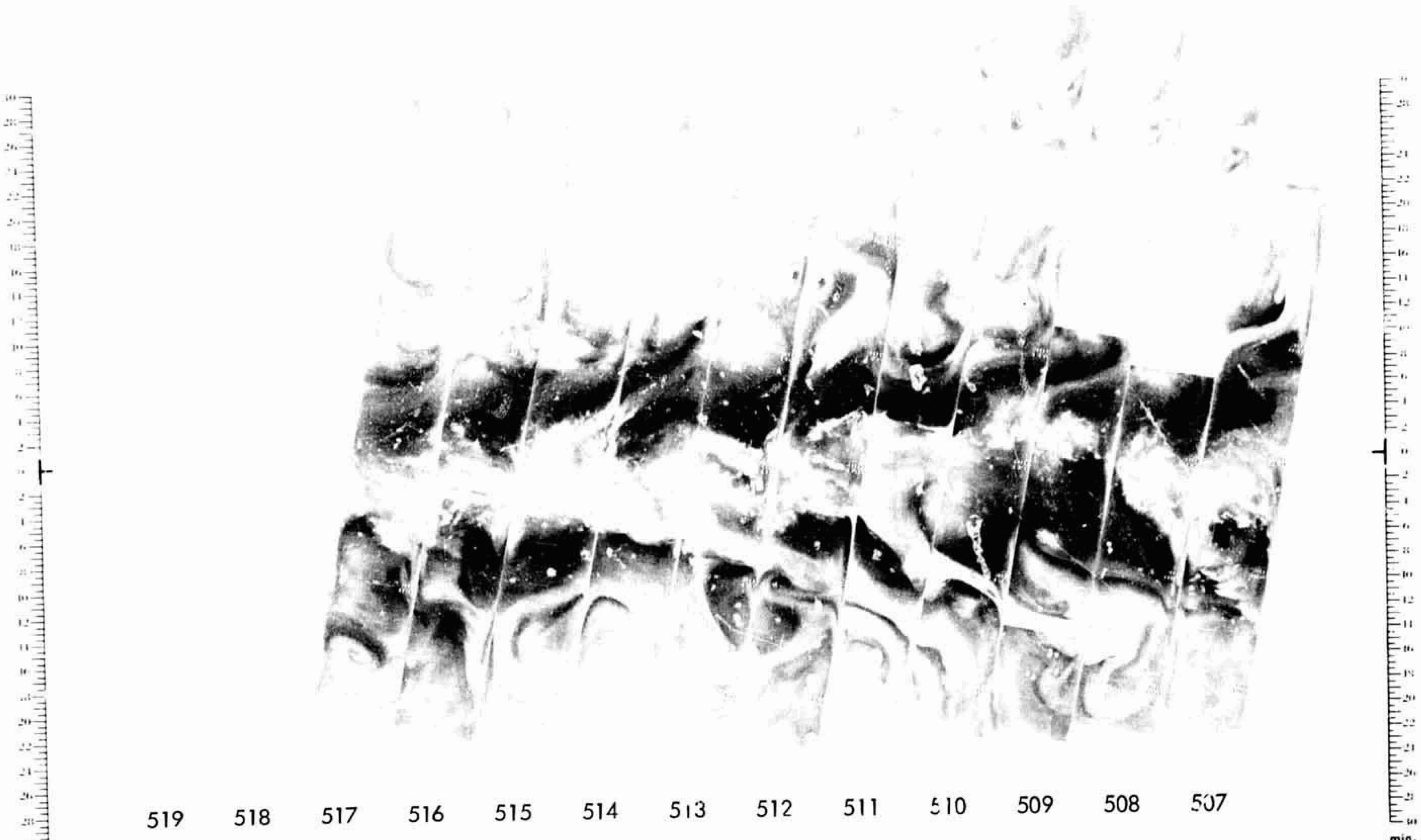
17 JANUARY 1973

6.7 μm



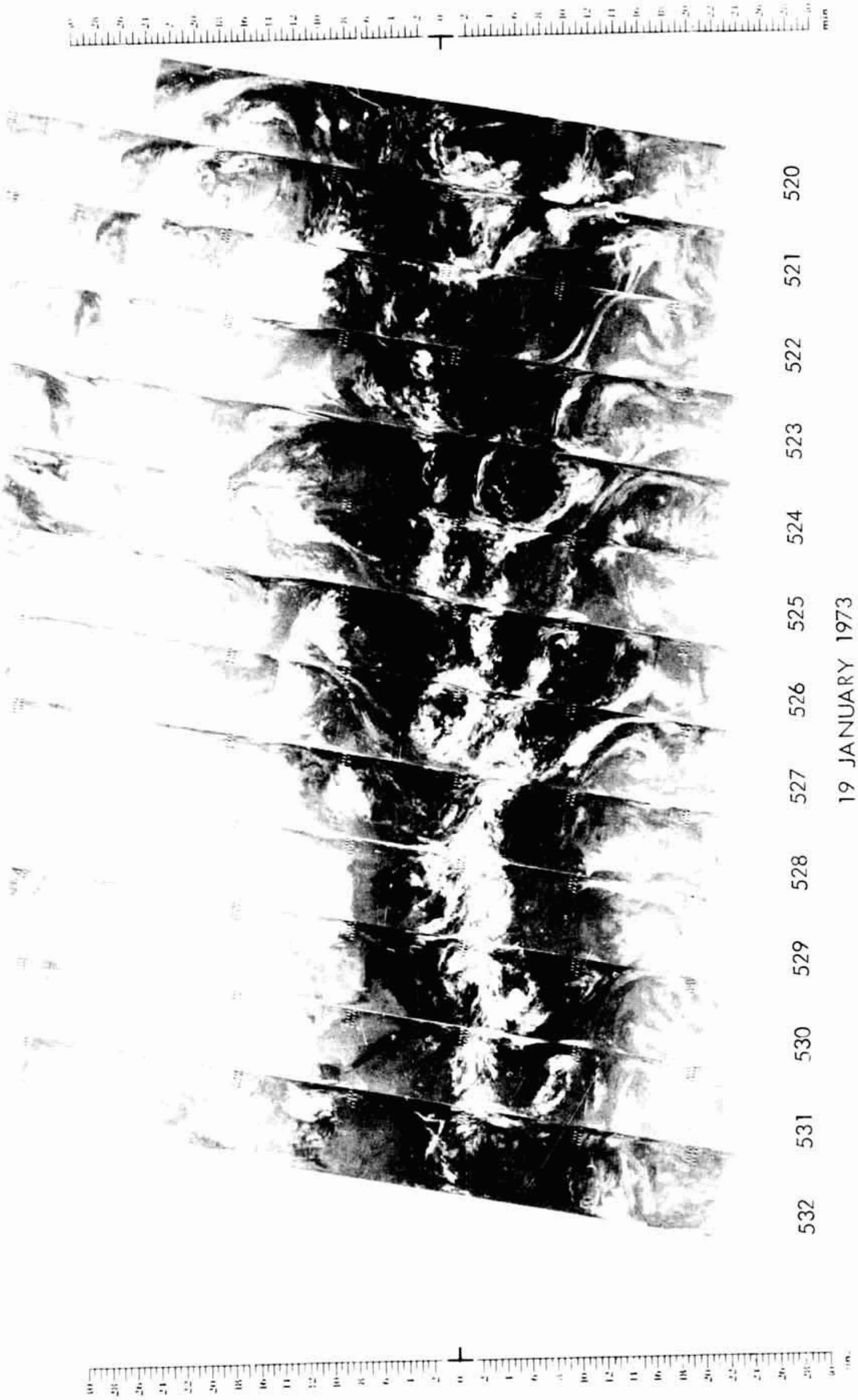
18 JANUARY 1973

11.5 μm



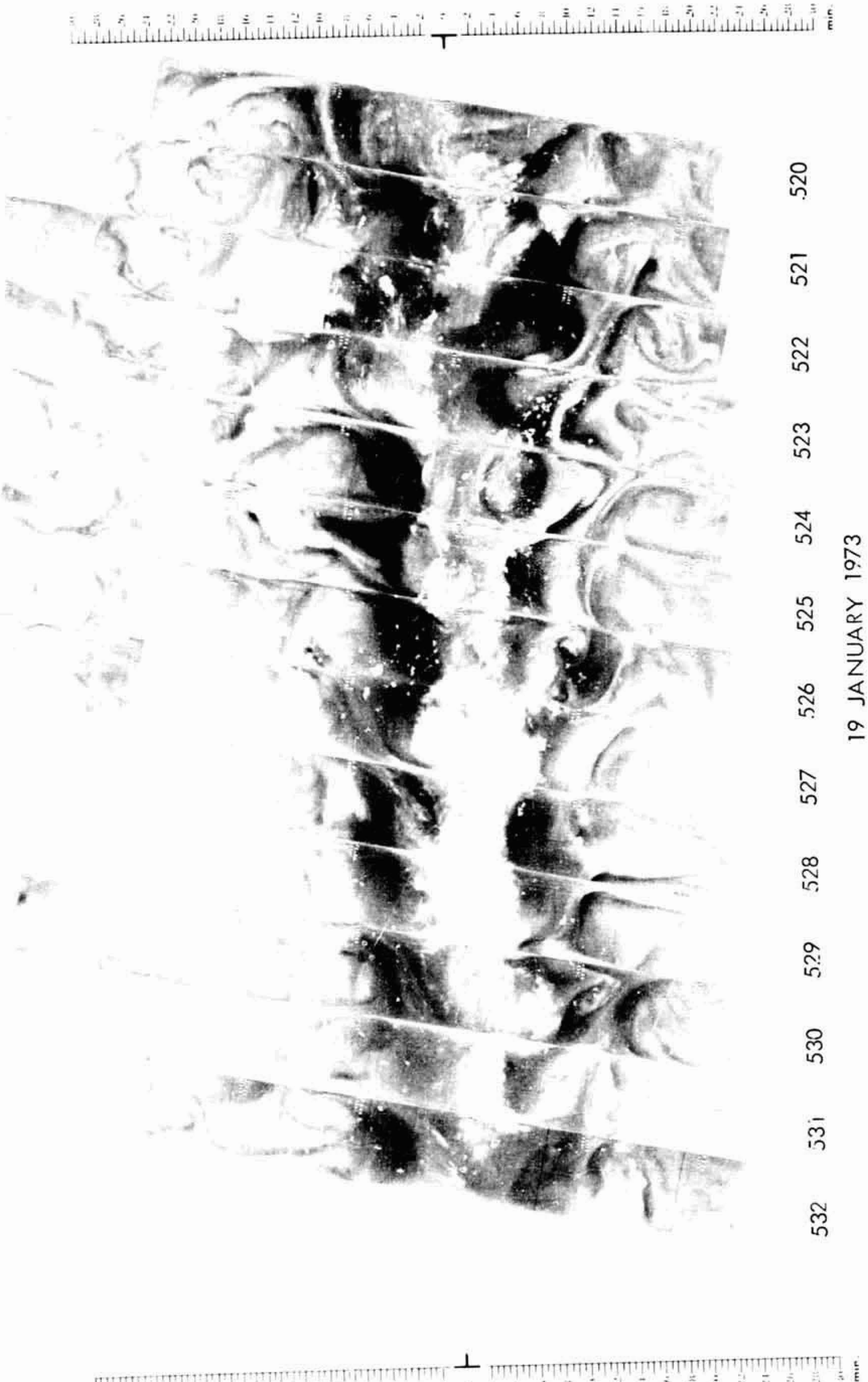
18 JANUARY 1973

6.7 μm



19 JANUARY 1973

11.5 μm

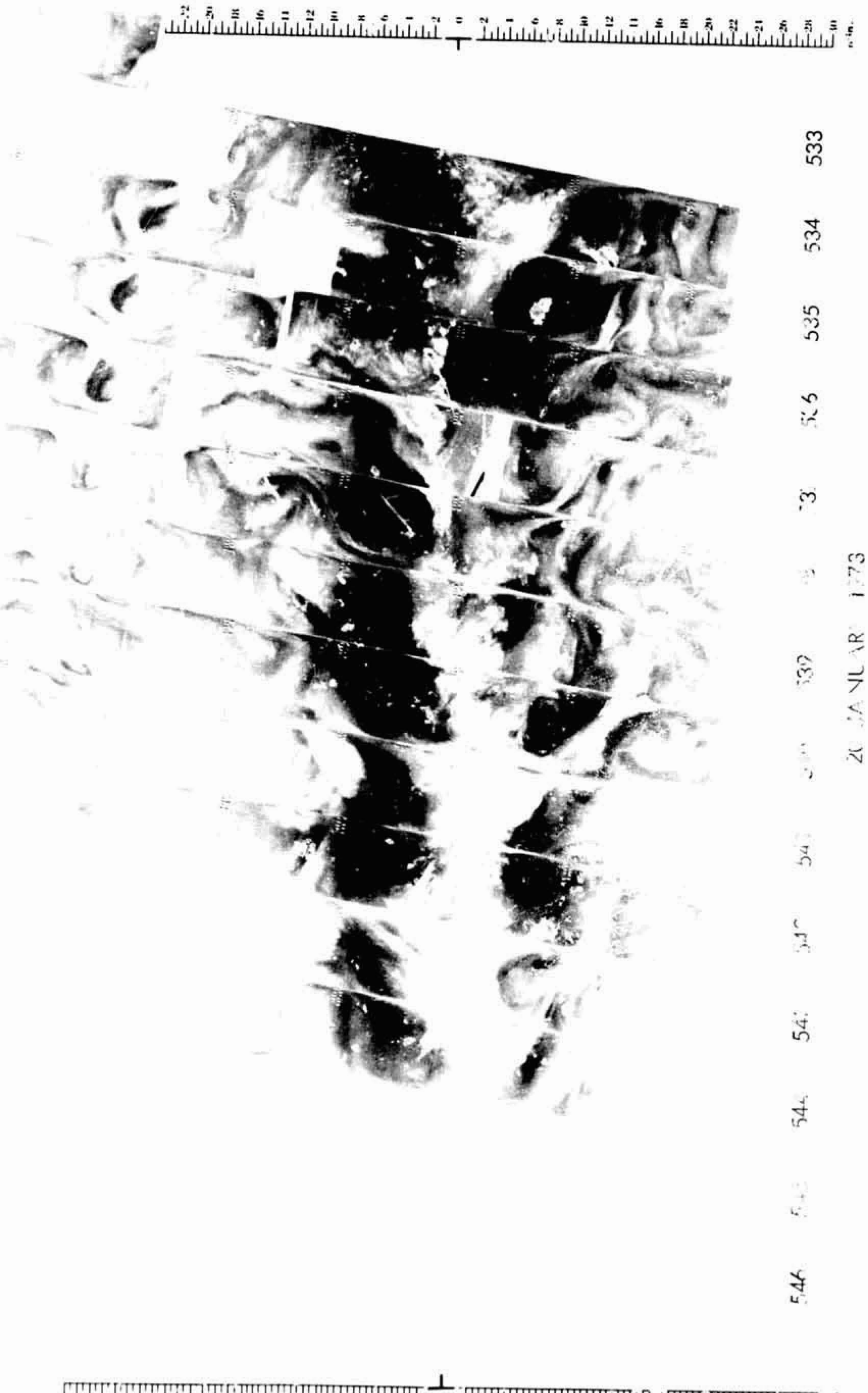


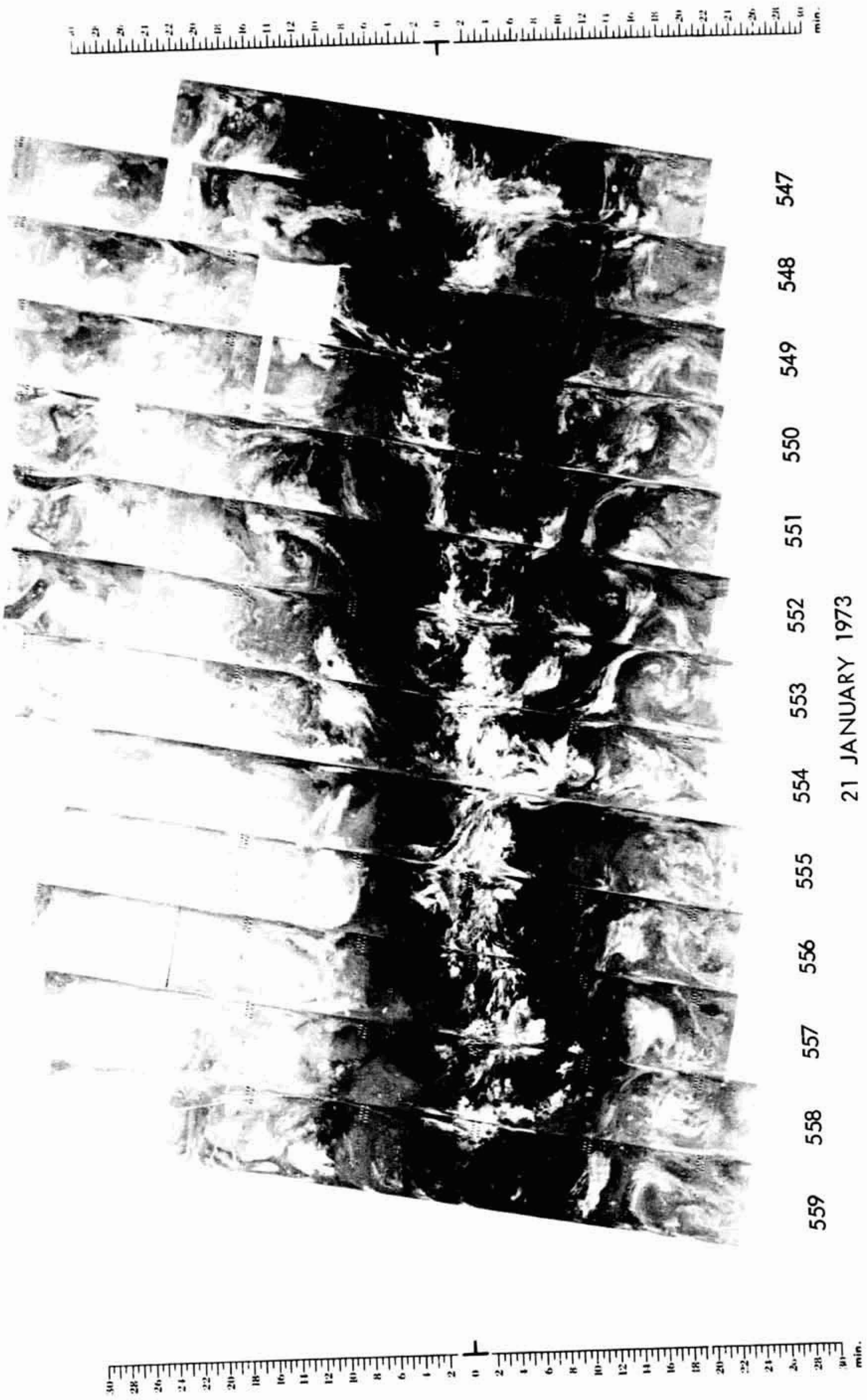
19 JANUARY 1973

6.7 μm

20 JANUARY 1973

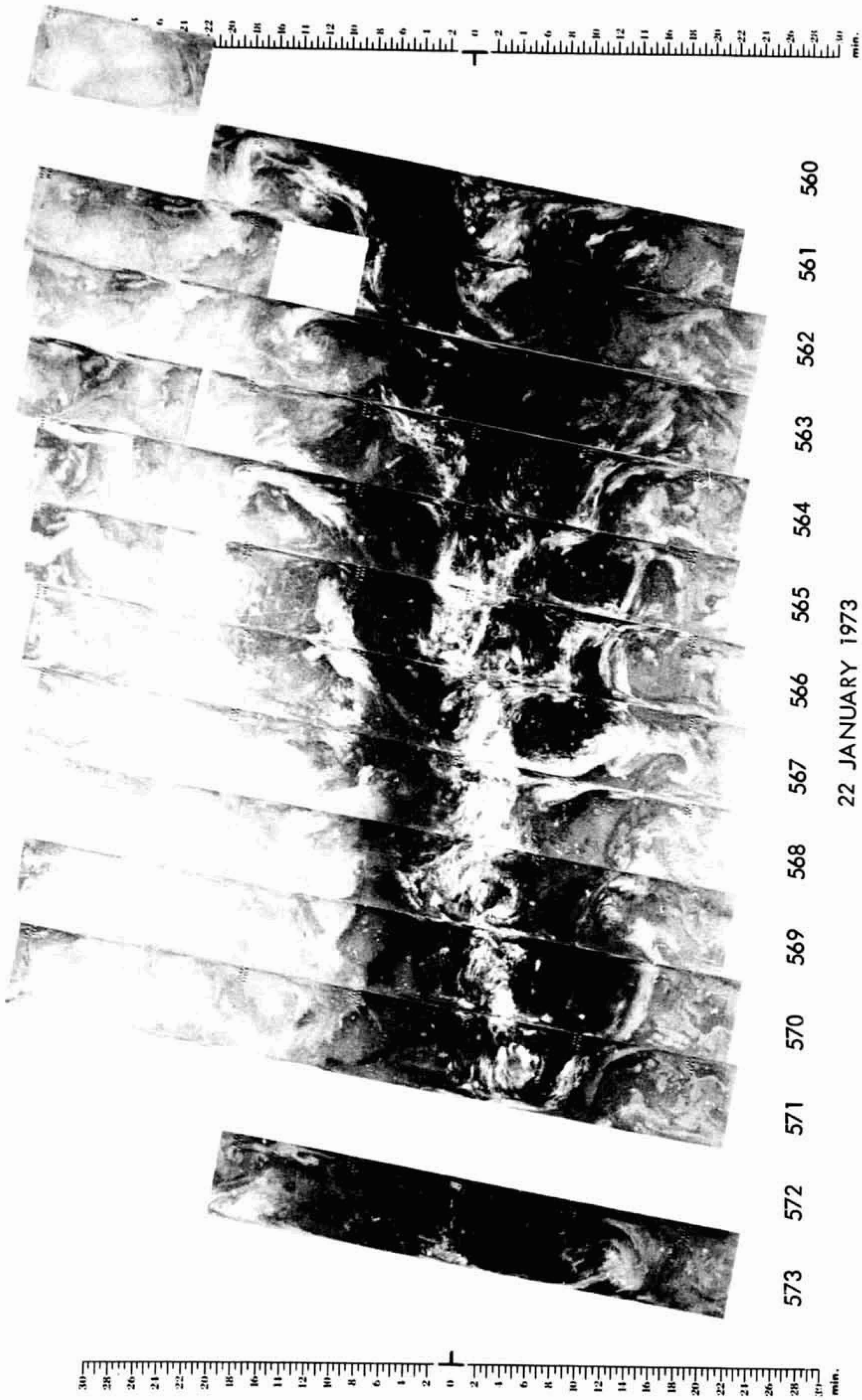
11.5 μm


533
534
535


547
548
549
550
551
552
553
554
555
556
557
558
559
21 JANUARY 1973
11.5 μm
min.
min.

21 JANUARY 1973

6.7 μm



22 JANUARY 1973

11.5 μm

22 JANUARY 1973

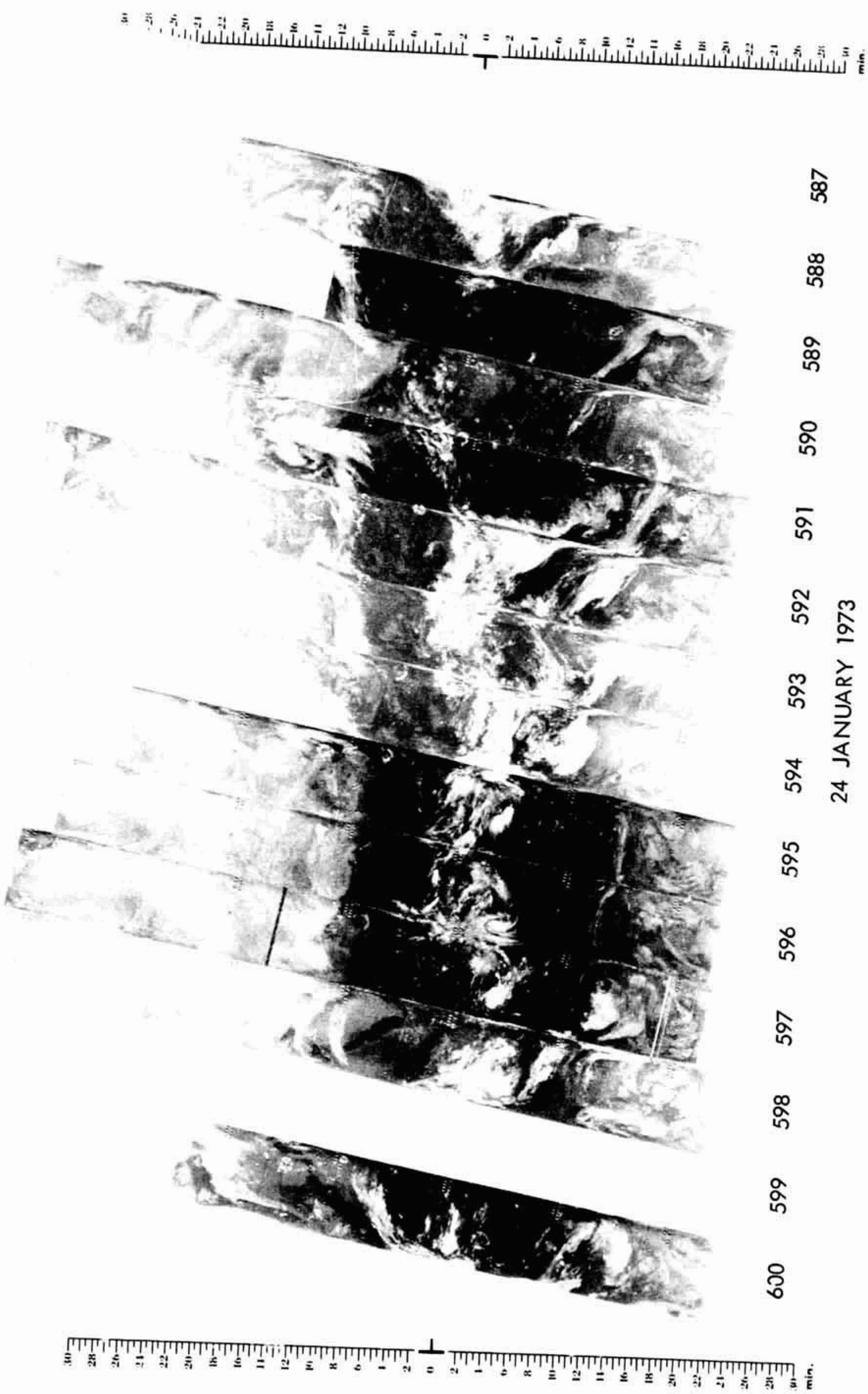
6.7 μm

23 JANUARY 1973

11.5 μm

23 JANUARY 1973

6.7 μm



24 JANUARY 1973

11.5 µm

600 599 598 597 596 595 594 593 592 591 590 589 588 587

24 JANUARY 1973

6.7 μm

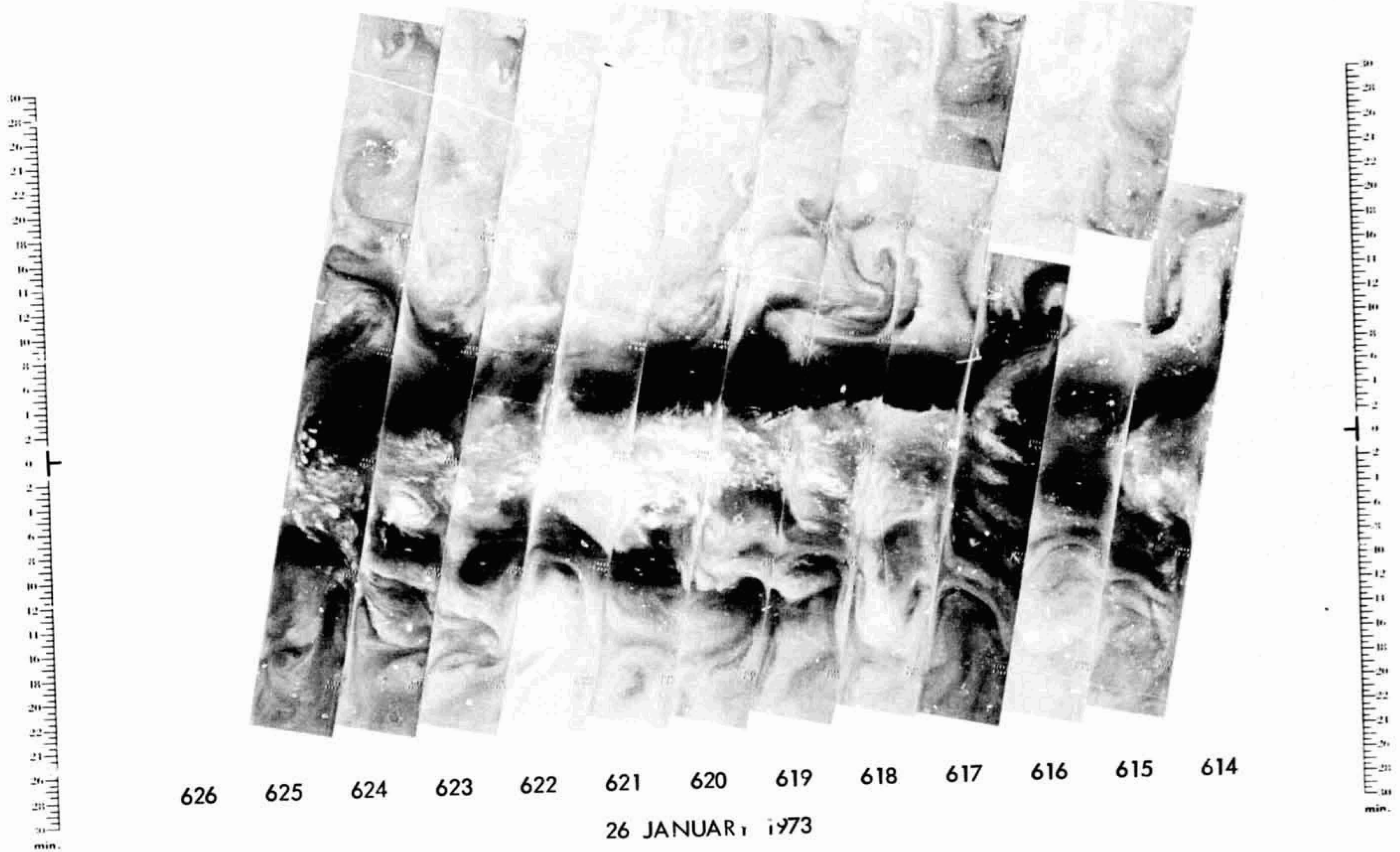
25 JANUARY 1973

11.5 μm

25 JANUARY 1973

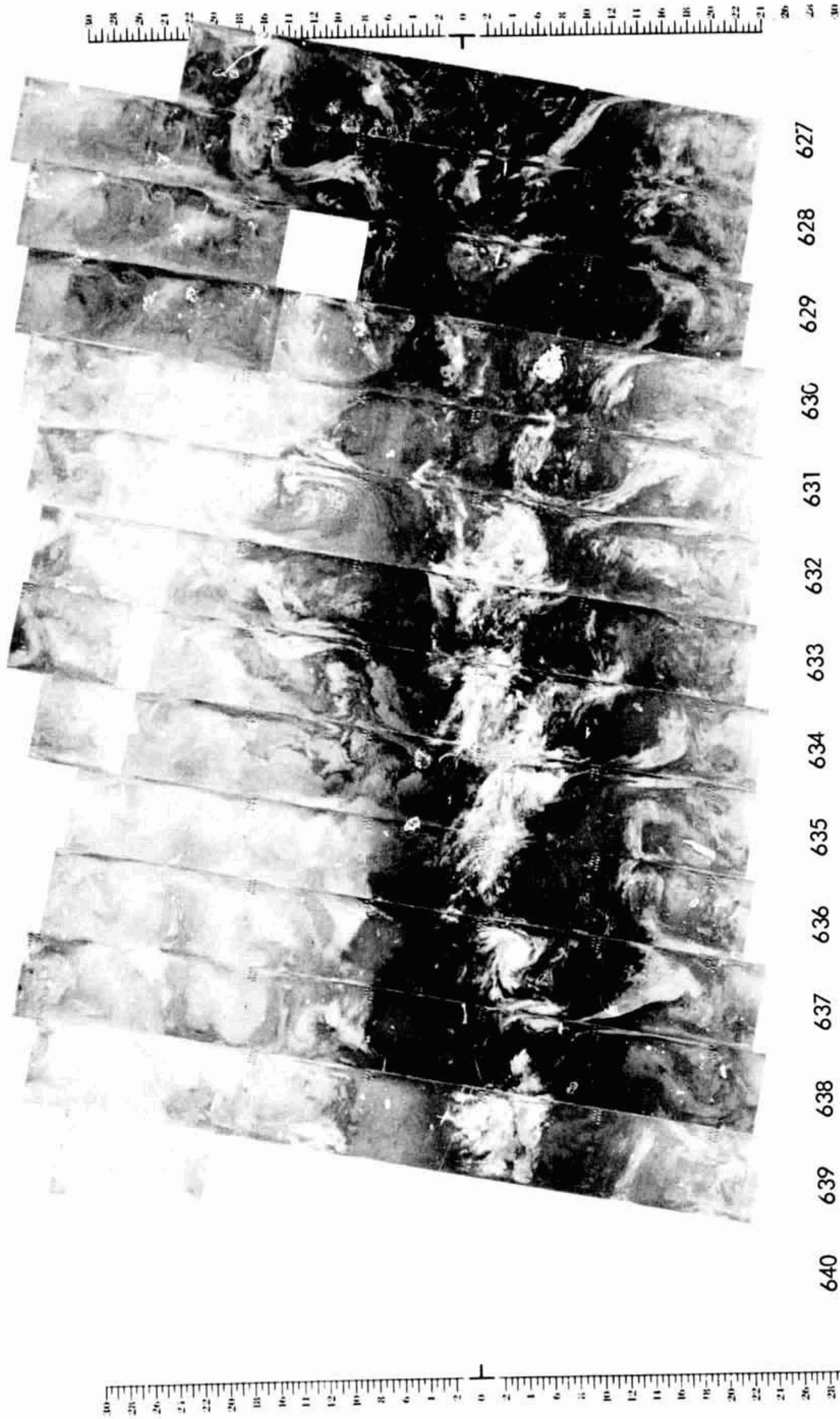
3.7 µm


614
615
616
617
618
619
620
621
622
623
624
625
626
26 JANUARY 1973
11.5 μm
min.



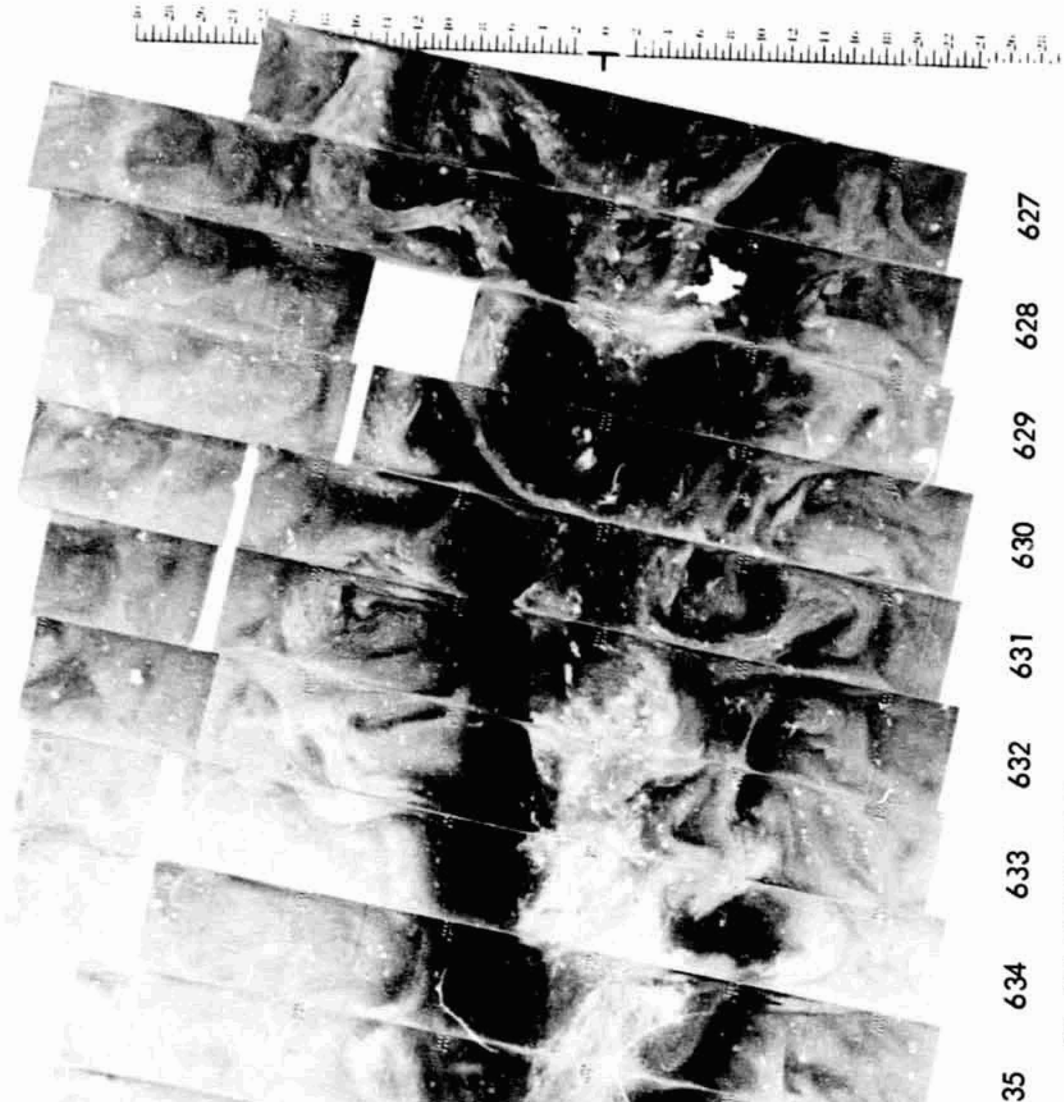
26 JANUARY 1973

6.7 μm



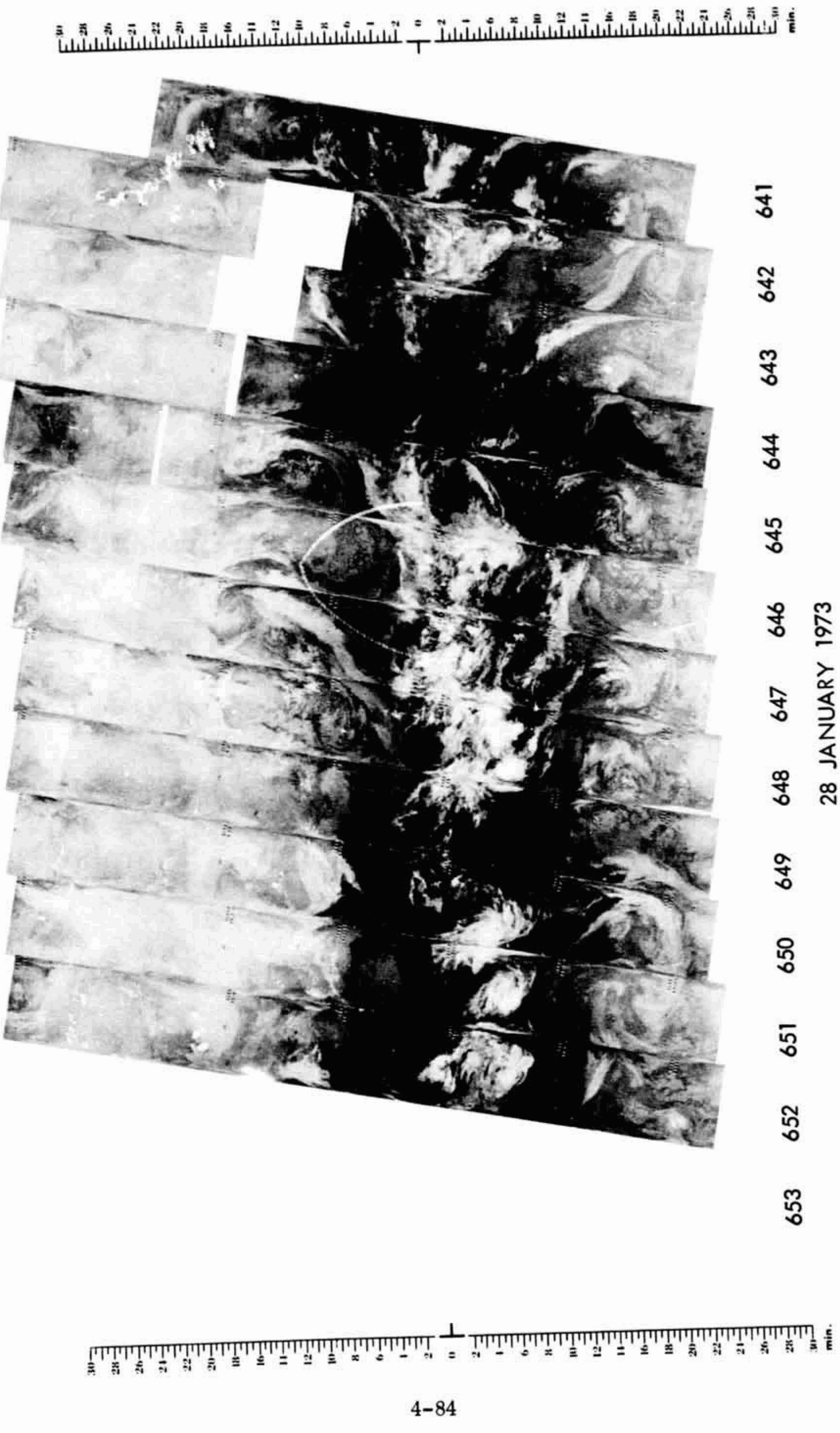
27 JANUARY 1973

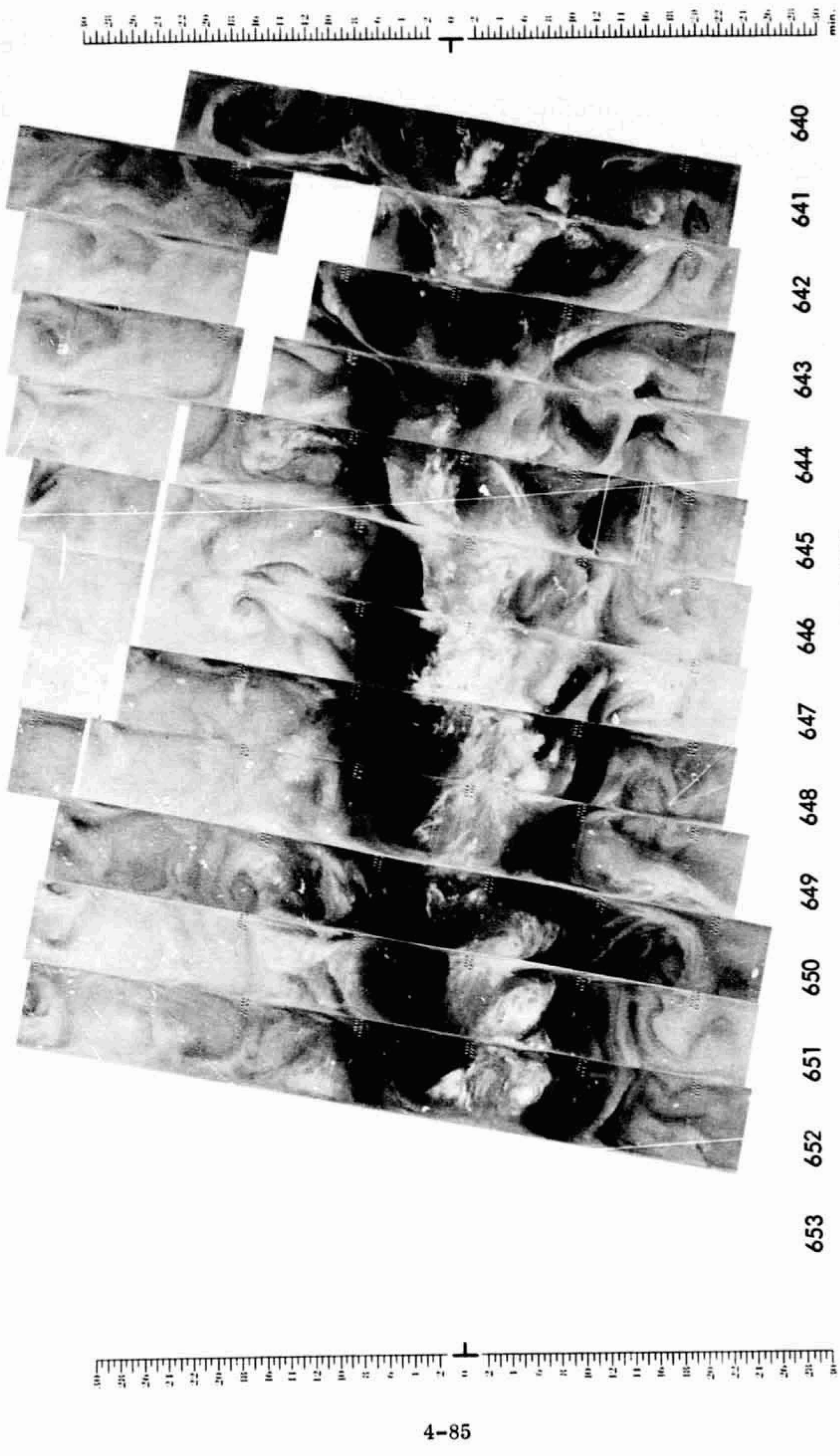
11.5 µm



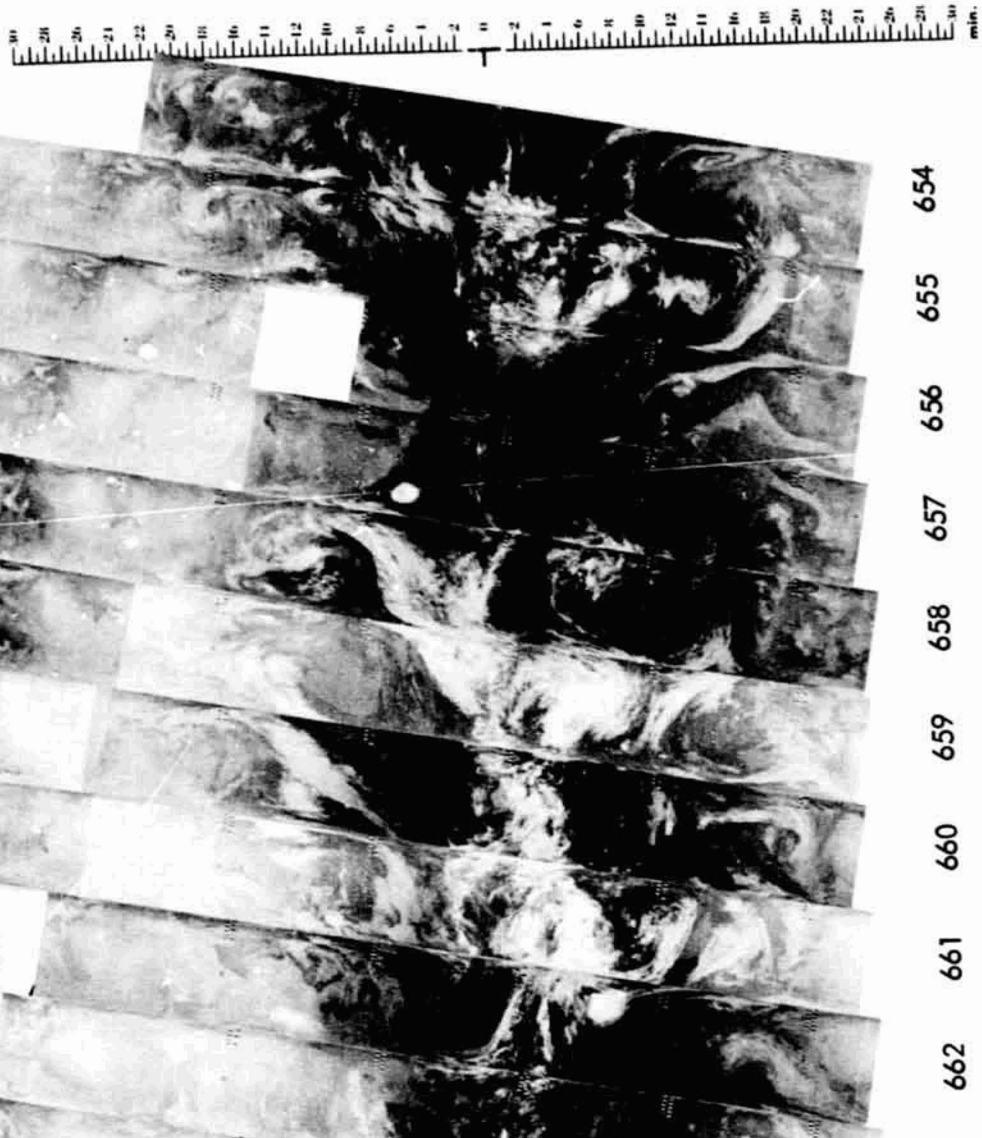
27 JANUARY 1973

6.7 μm


641
642
643
644
645
646
647
648
649
650
651
652
653
28 JANUARY 1973
11.5 μm
min.
min.



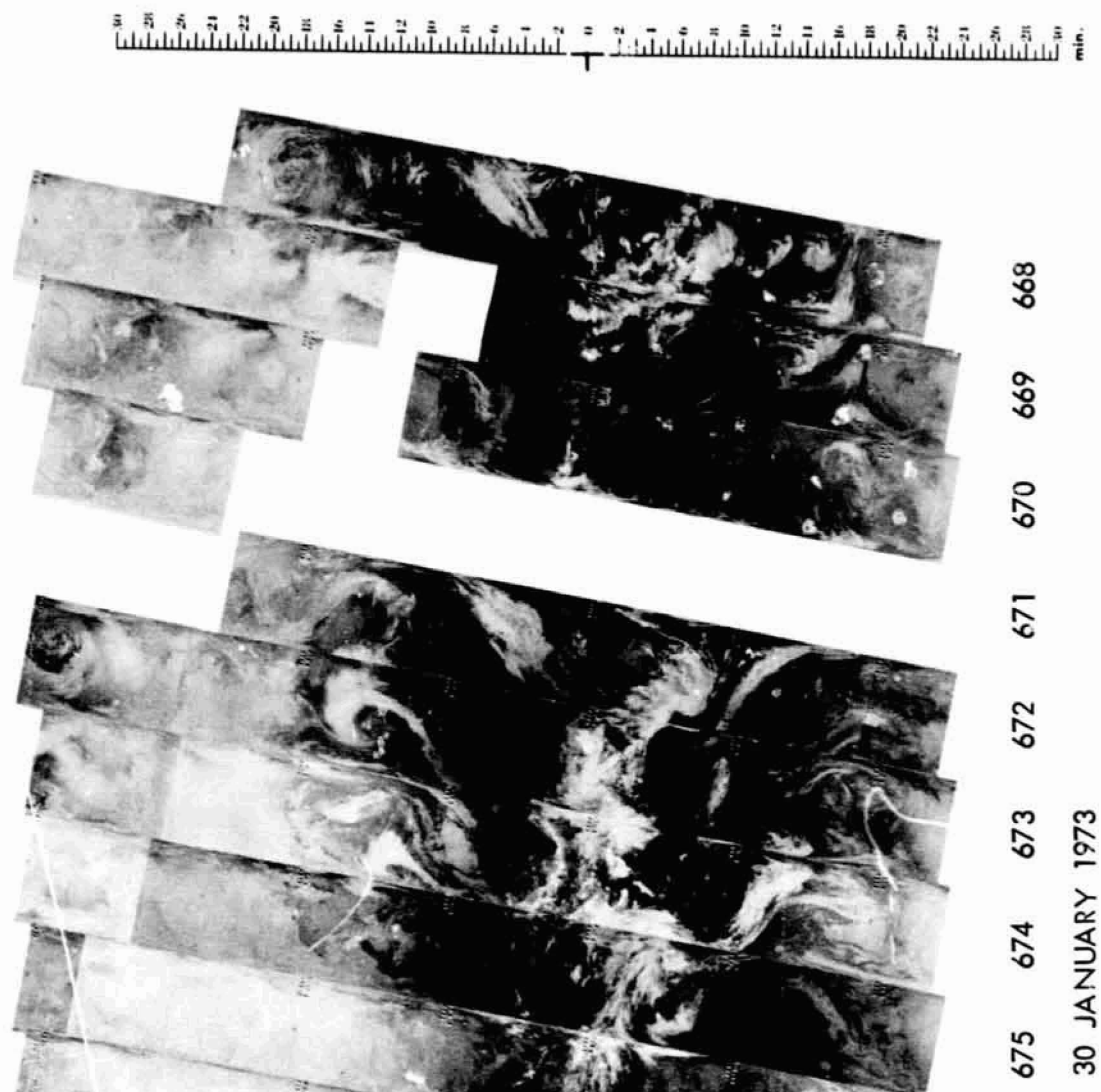
28 JANUARY 1973
6.7 μm



29 JANUARY 1973

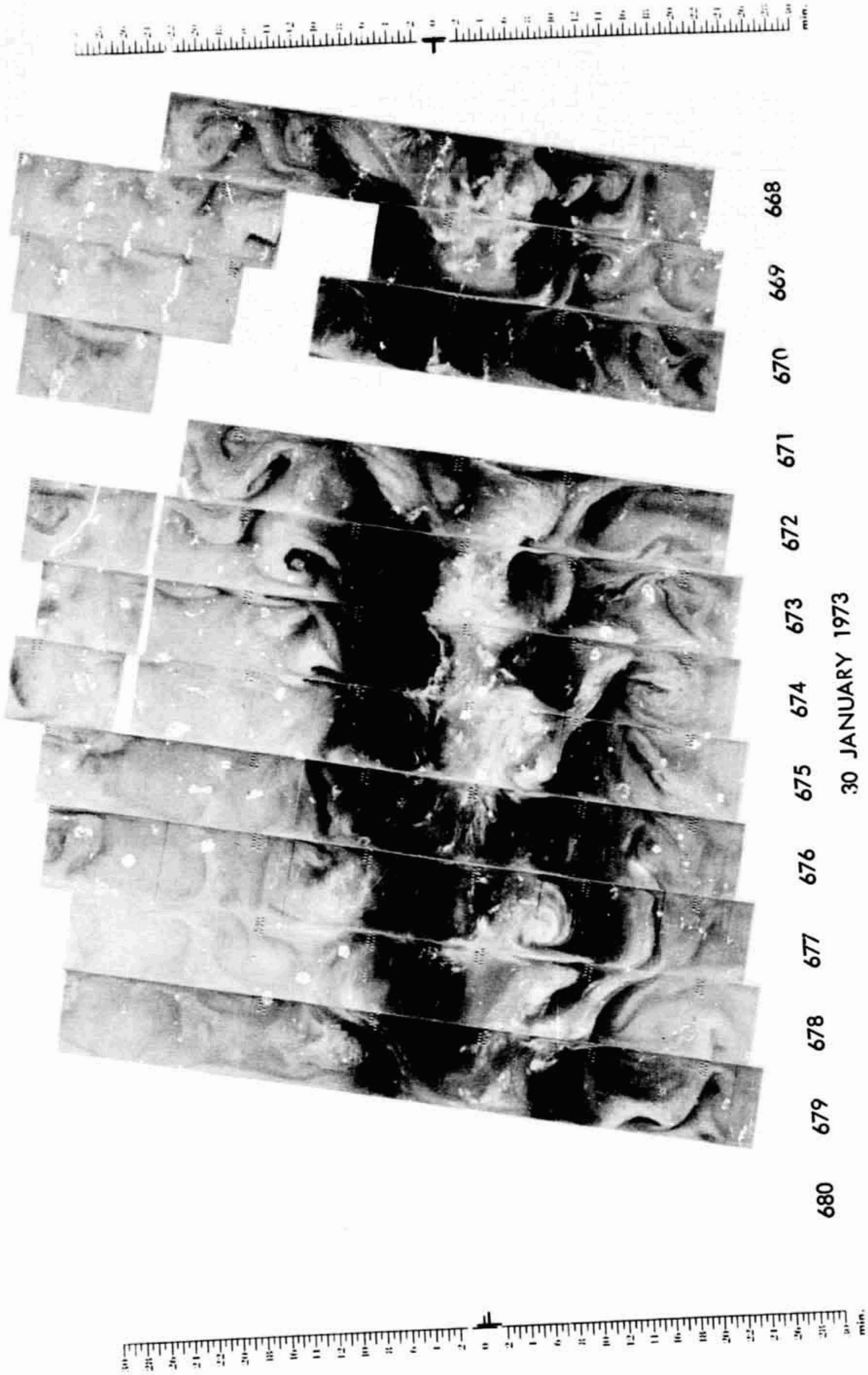
11.5 μm


654
655
656
657
658
659
660
661
662
663
664
665
666
667
29 JANUARY 1973
6.7 µm



30 JANUARY 1973

11.5 μm


668
669
670
671
672
673
674
675
676
677
678
679
680
30 JANUARY 1973
6.7 μm

31 JANUARY 1973

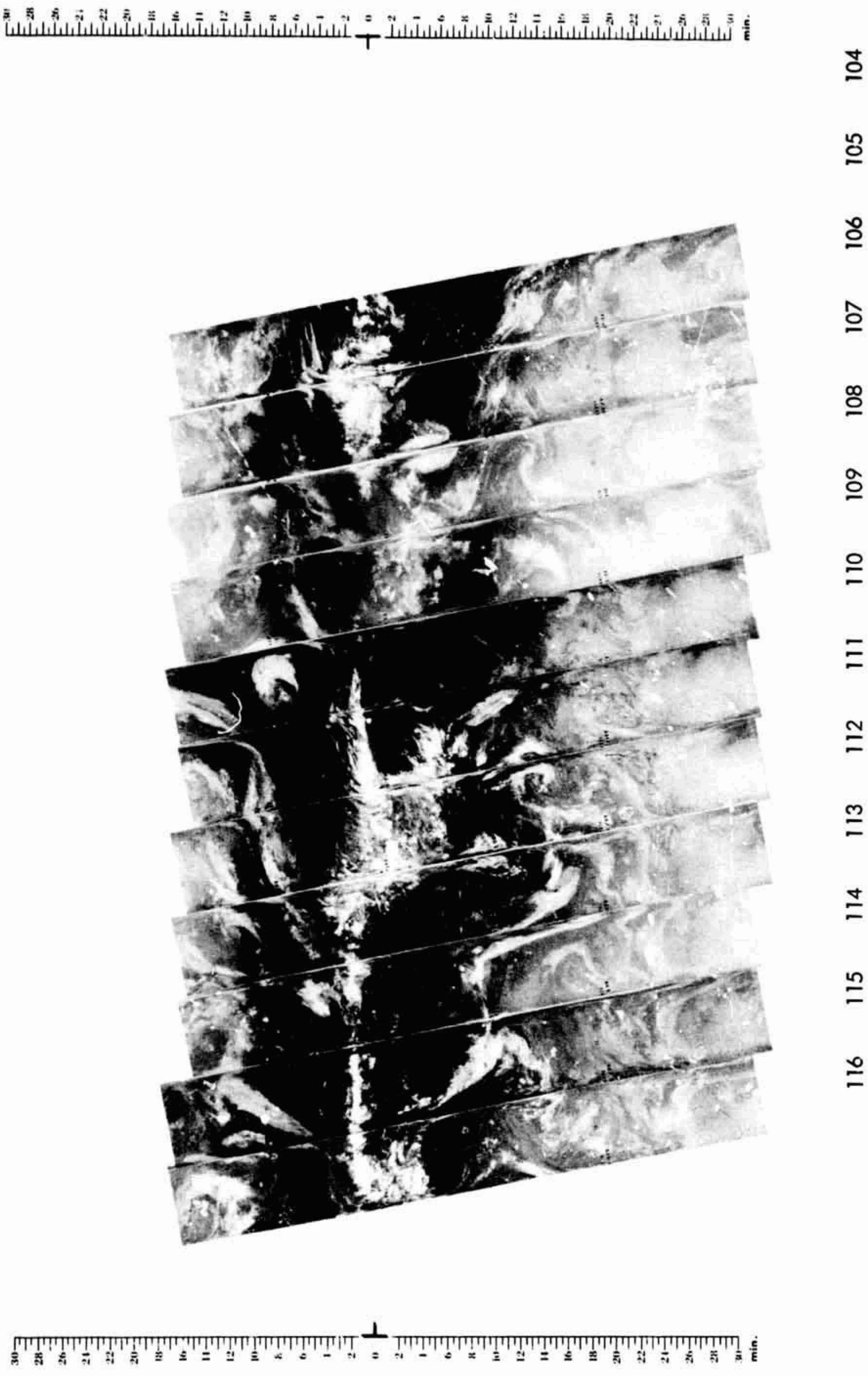
11.5 µm

31 JANUARY 1973

6.7 μm

SECTION 4.2
TEMPERATURE HUMIDITY INFRARED RADIOMETER
DAYTIME MONTAGES

PRECEDING PAGE BLANK NOT FILMED

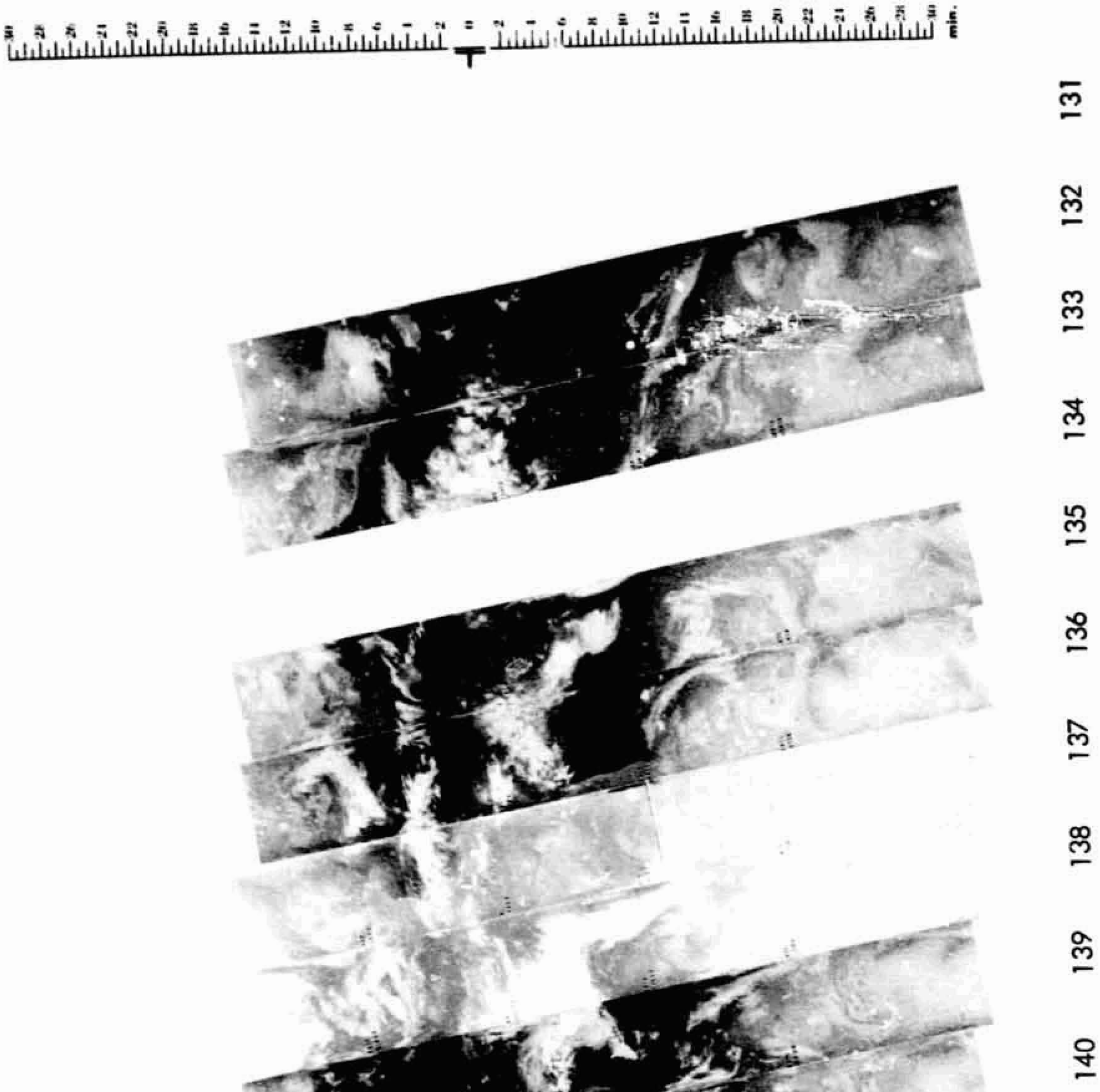


19 DECEMBER 1972
11.5 μm

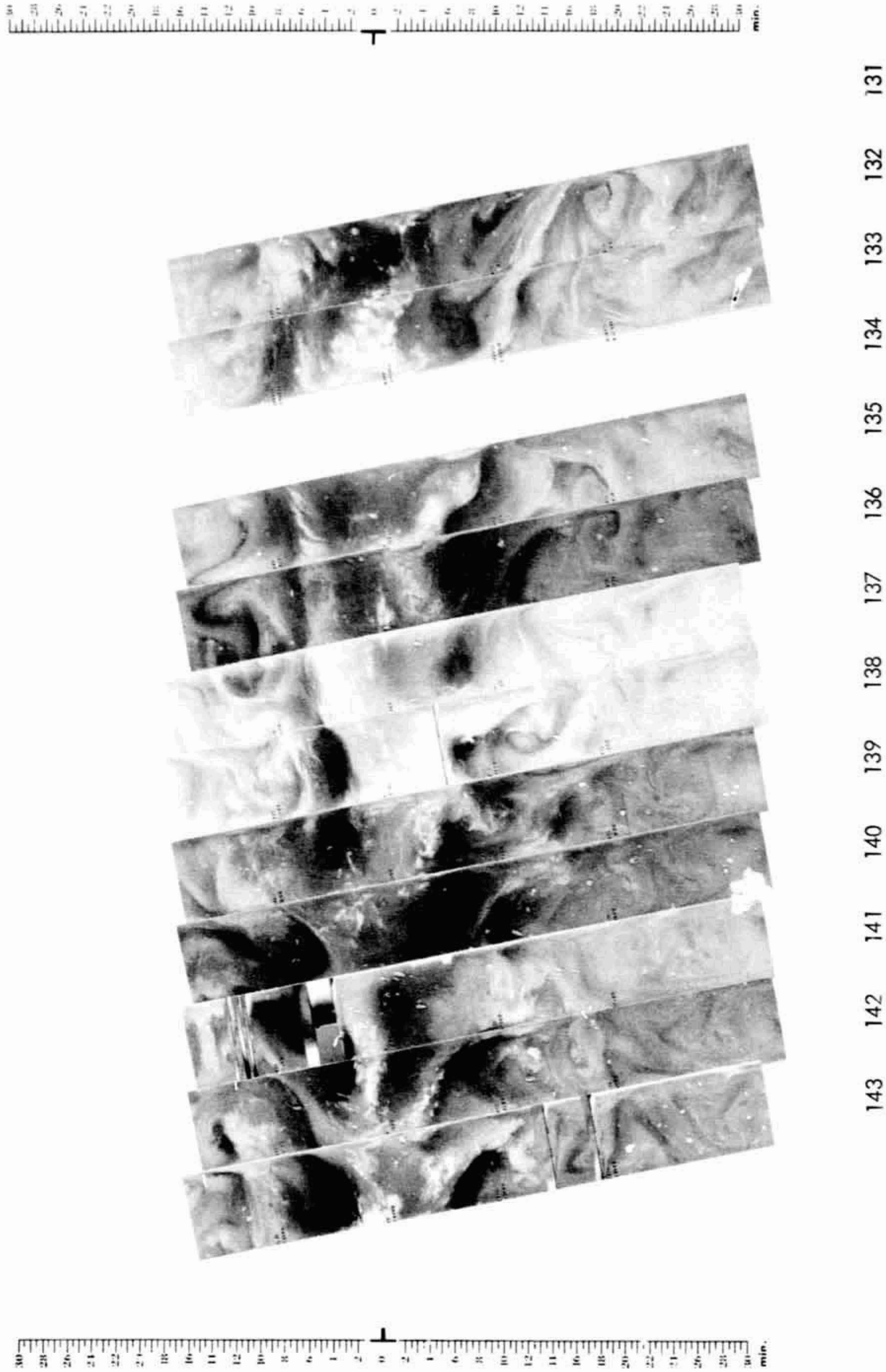
19 DECEMBER 1972
6.7μm

20 DECEMBER 1972
11.5 μm

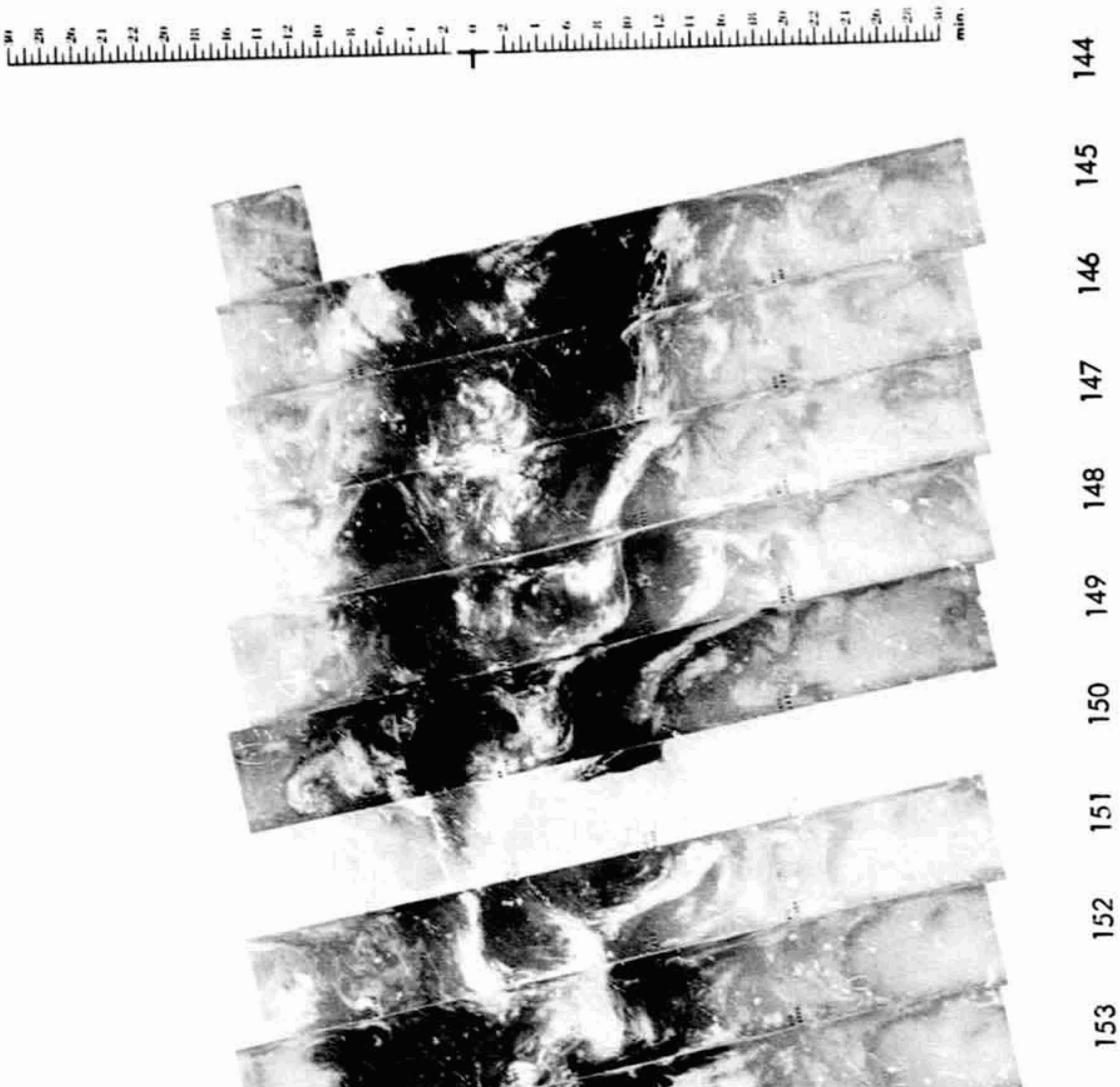
20 DECEMBER 1972
6.7 μm



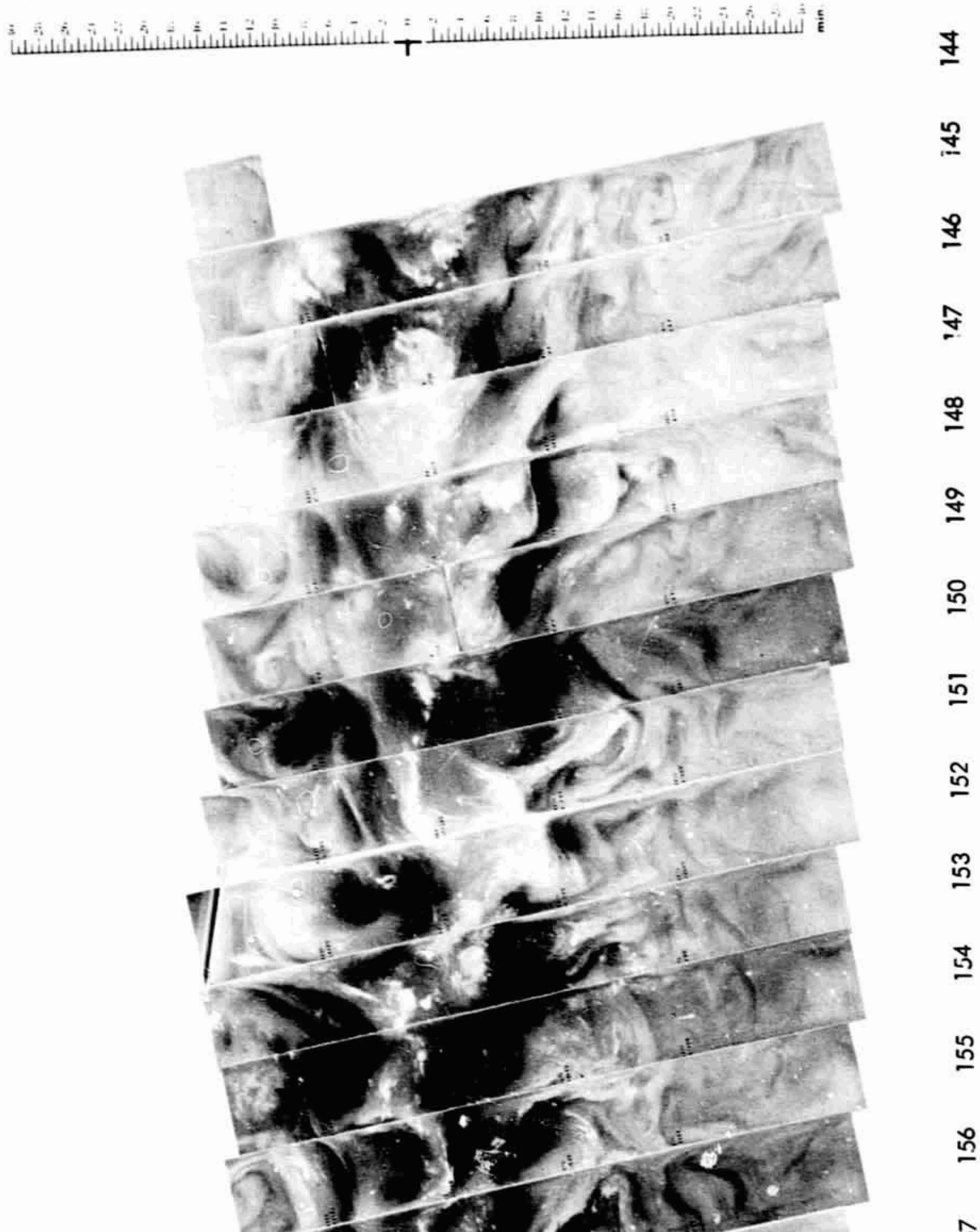
21 DECEMBER 1972
11.5 μm



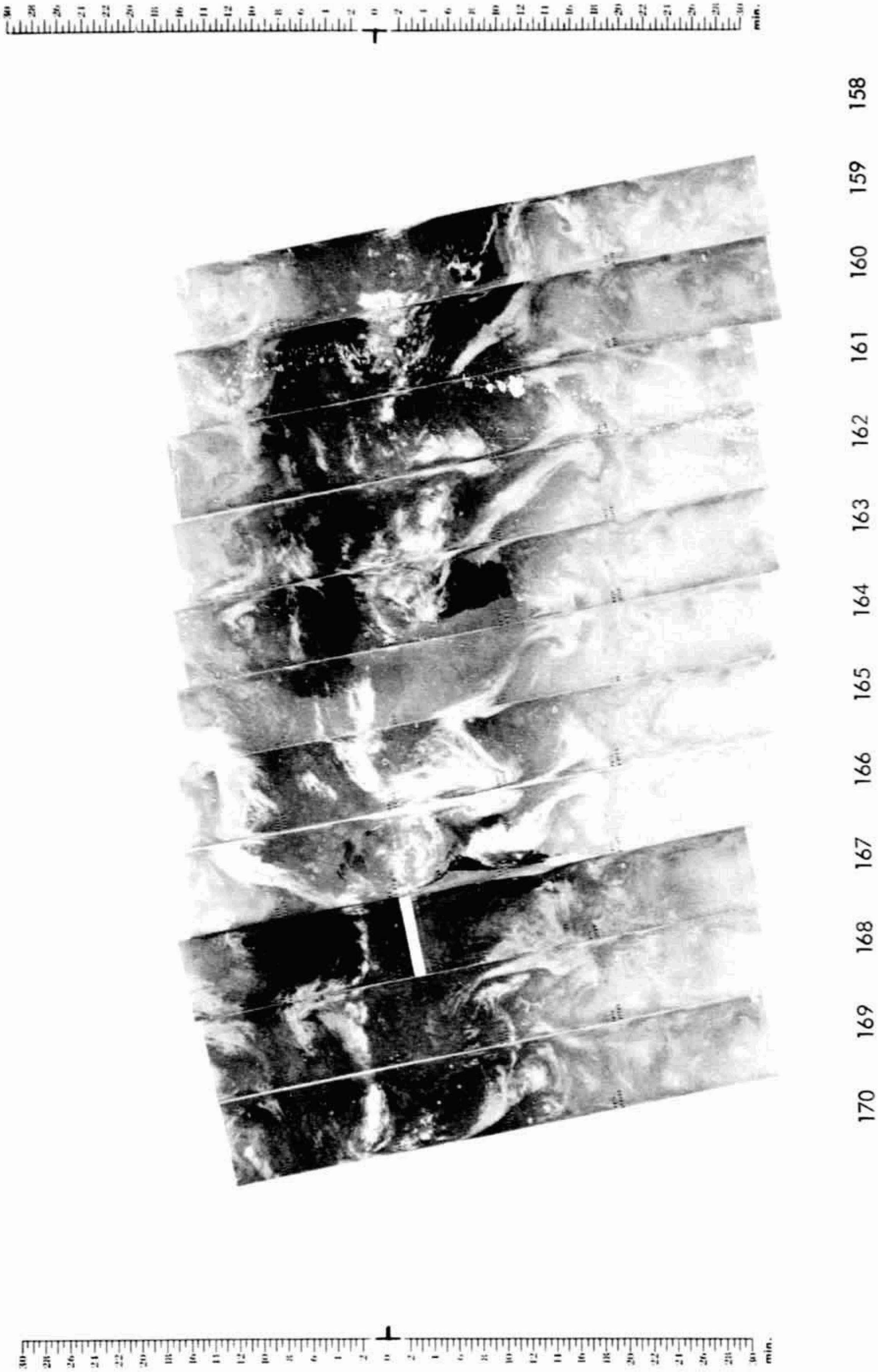
21 DECEMBER 1972
6.7 μm



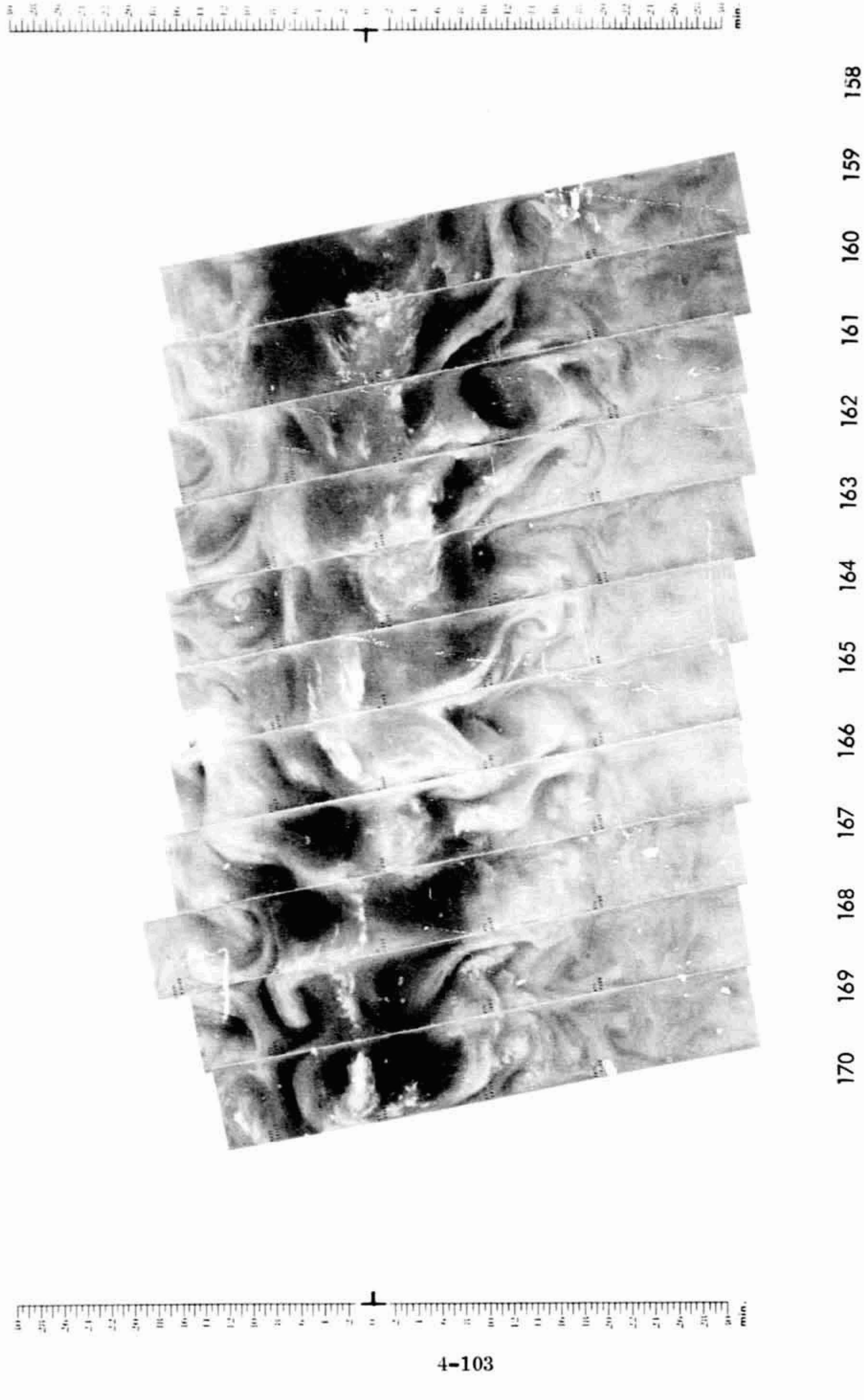
22 DECEMBER 1972
11.5 μm



22 DECEMBER 1972
6.7 μm



23 DECEMBER 1972
11.5 μm

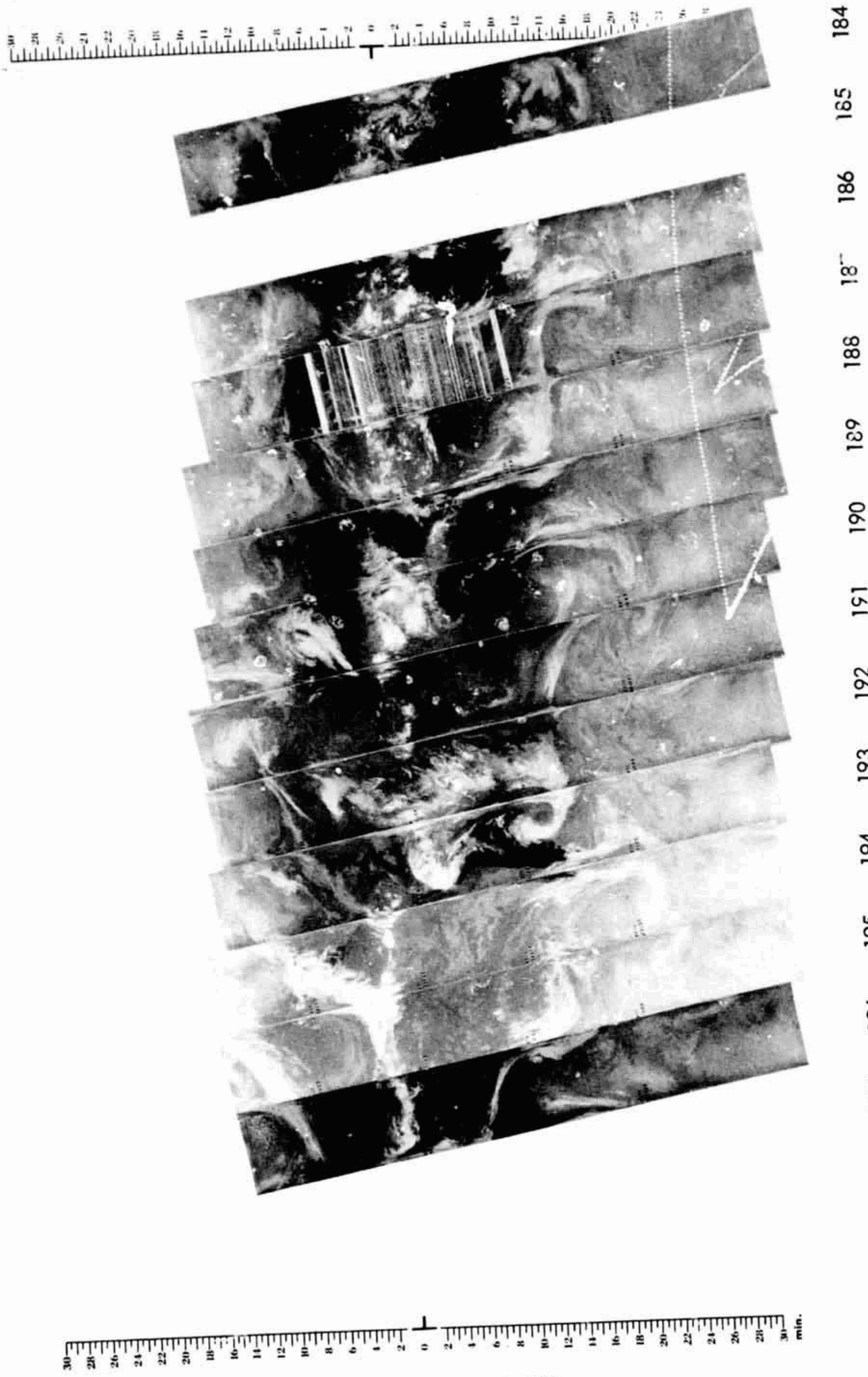


23 DECEMBER 1972
6.7 μm

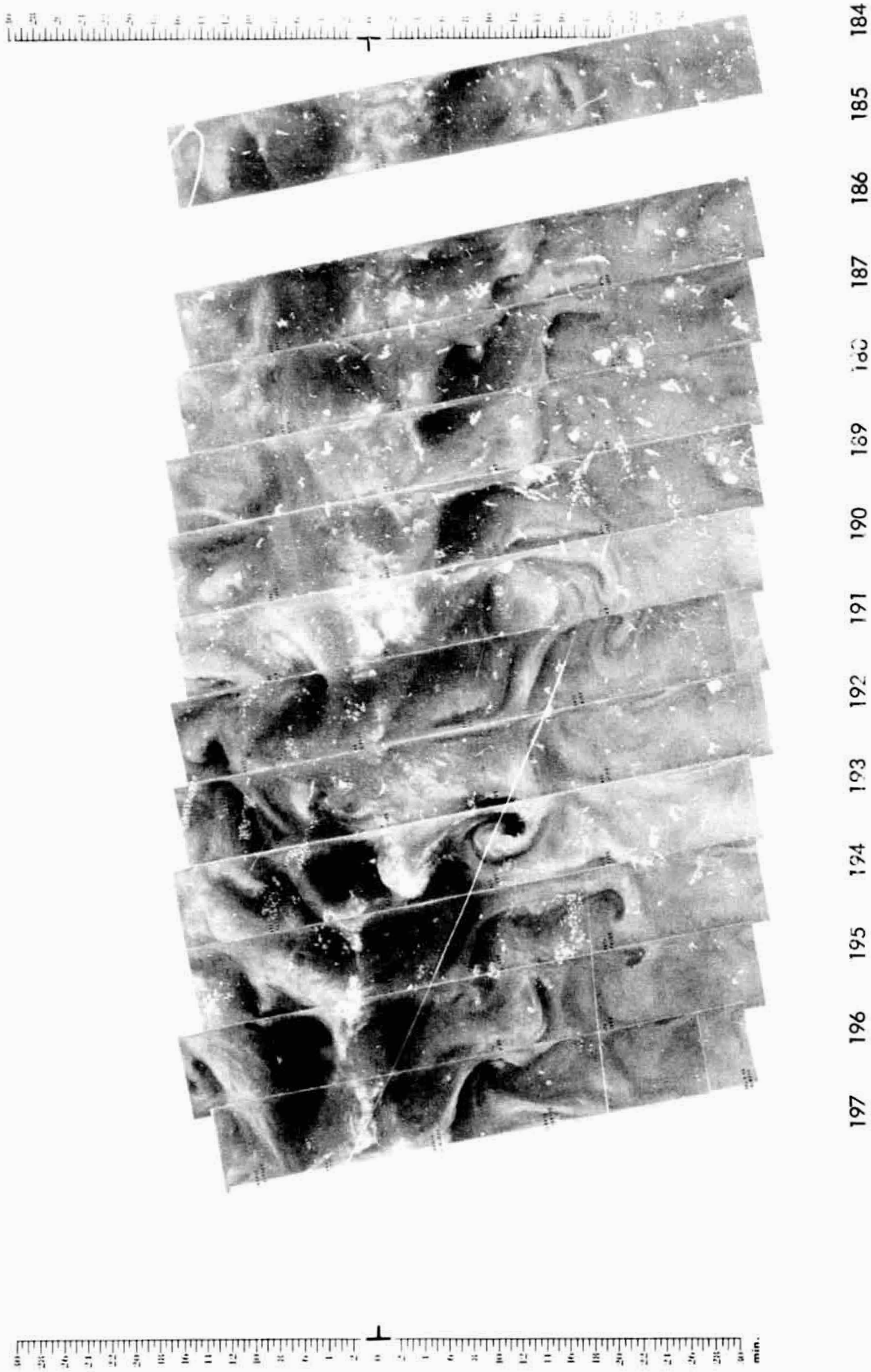
24 DECEMBER 1972
11.5 μm

171 172 173 174 175 176 177 178 179 180 181 182 183

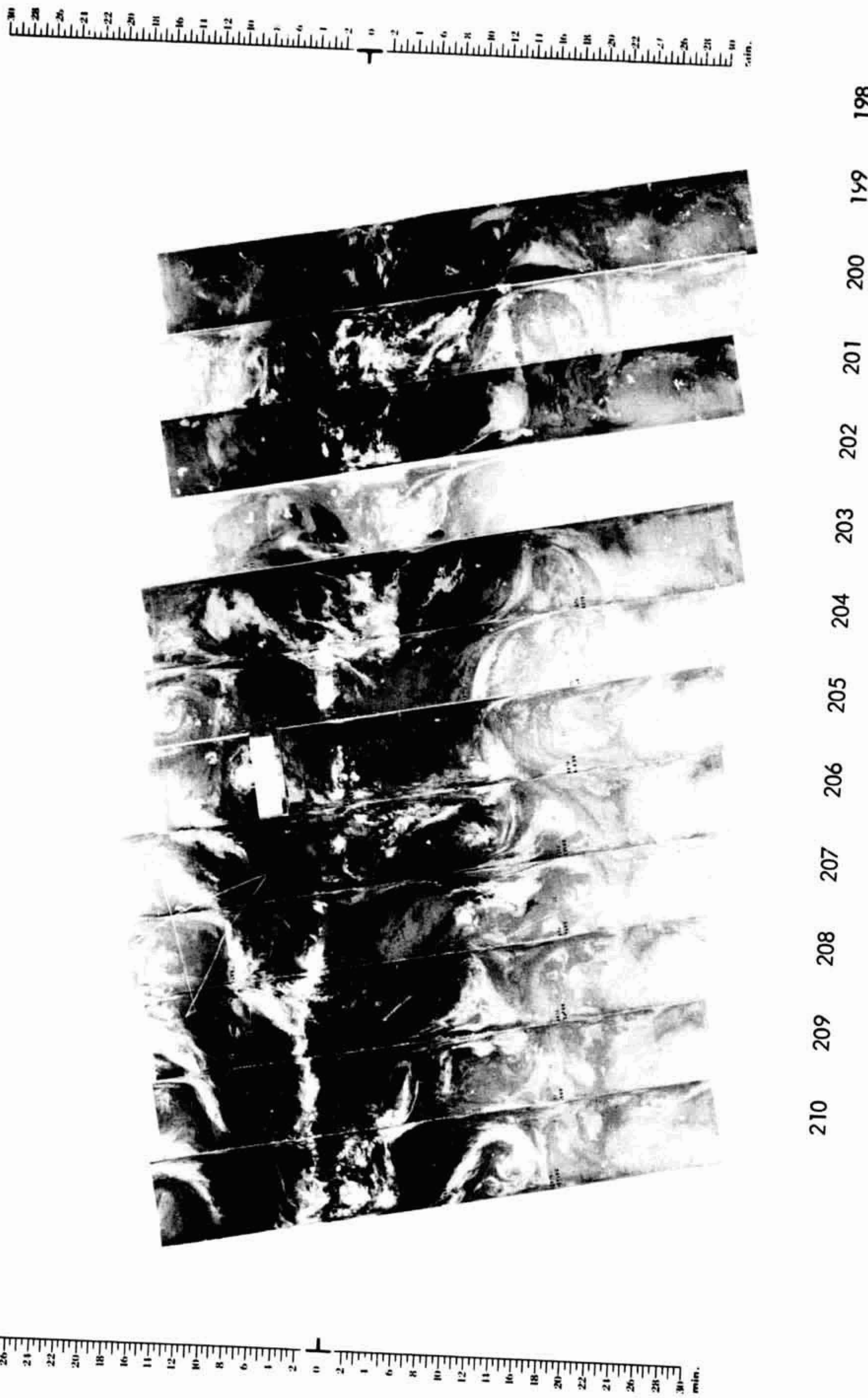
24 DECEMBER 1972
6.7 μm



25 DECEMBER 1972
11.5 µm



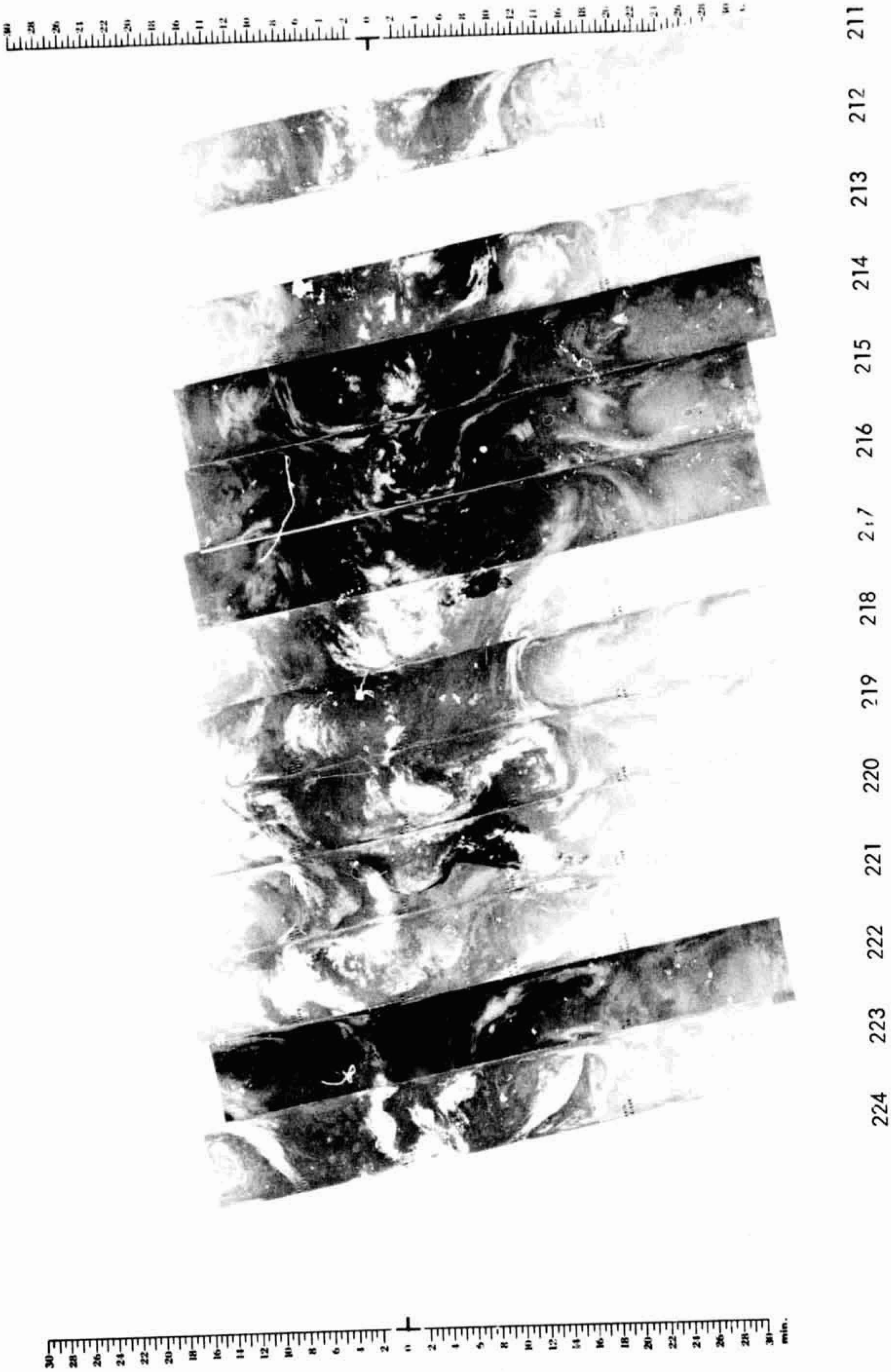
25 DECEMBER 1972
6.7 μm



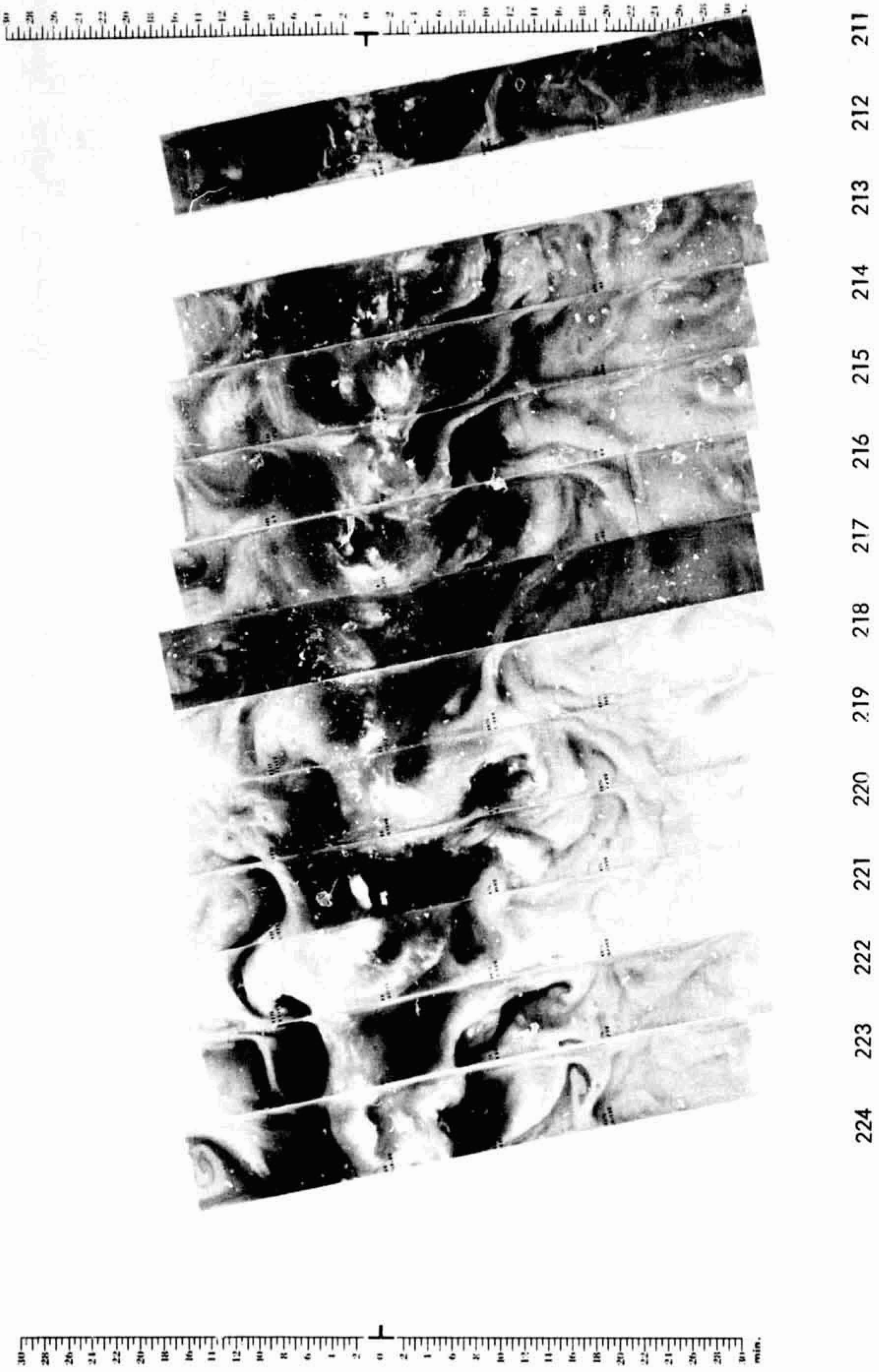
26 DECEMBER 1972
11.5 μm

198 199 200 201 202 203 204 205 206 207 208 209 210

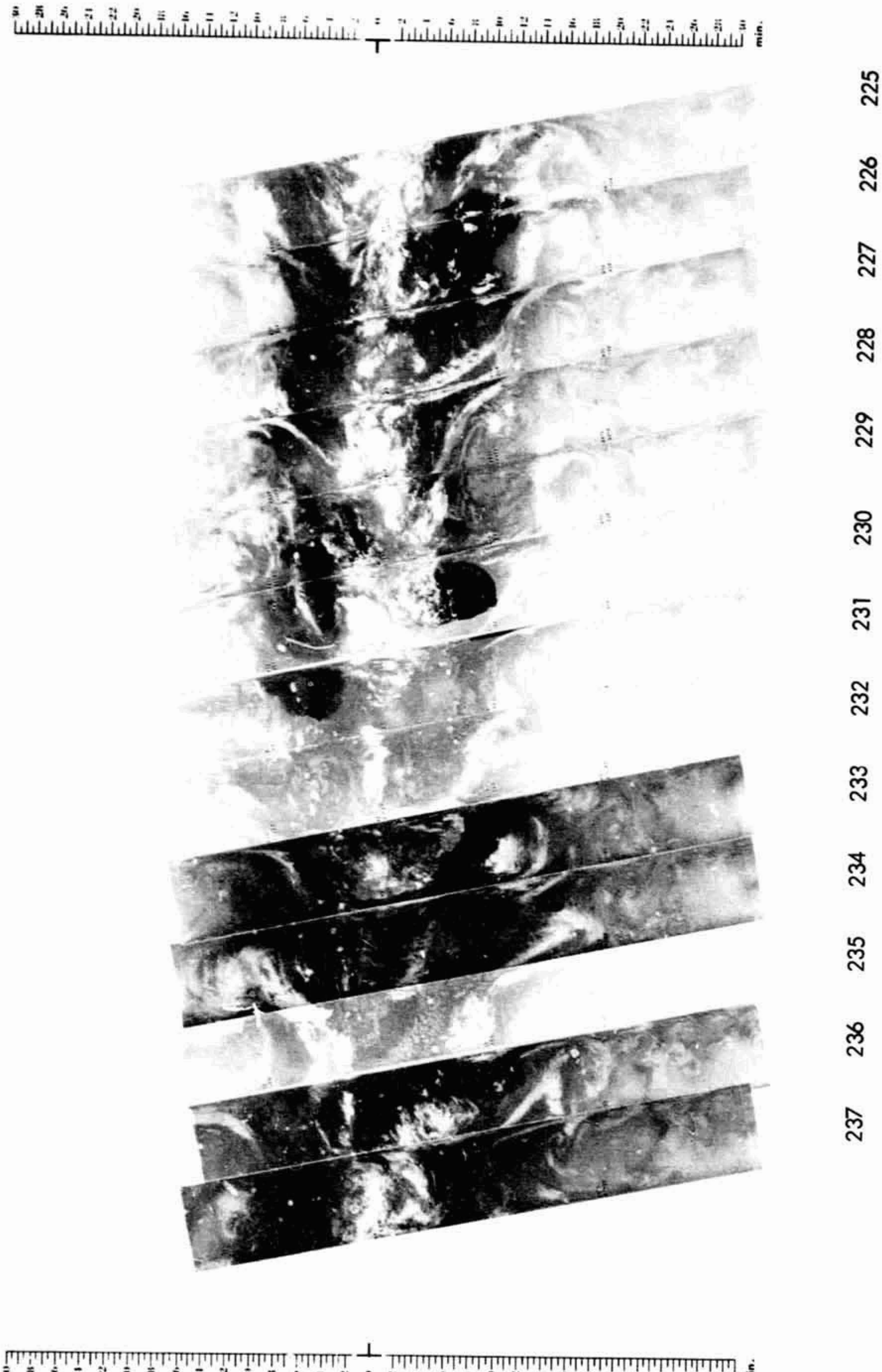
26 DECEMBER 1972
6.7 µm



27 DECEMBER 1972
11.5 μm

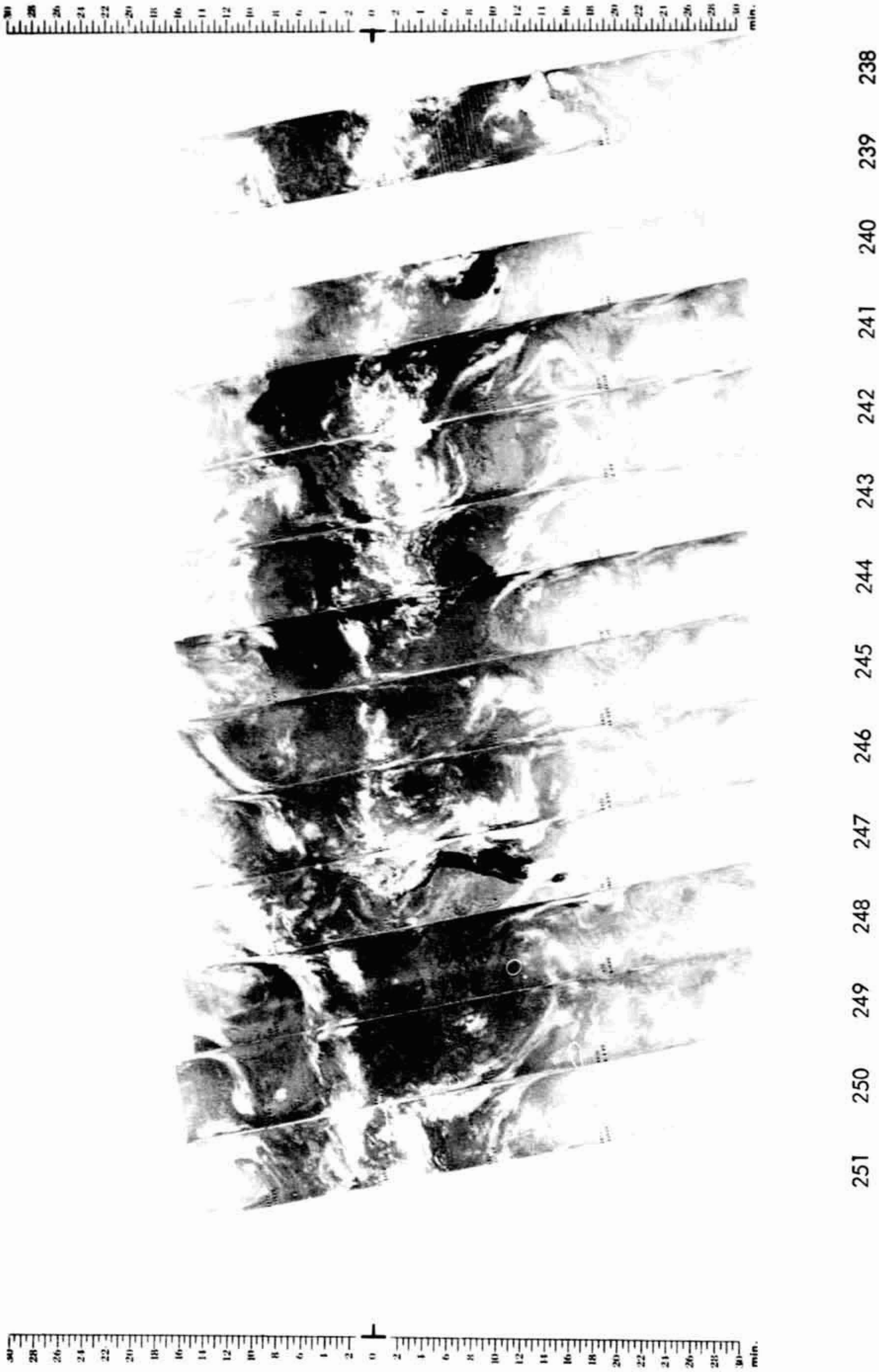


27 DECEMBER 1972
6.7 µm



28 DECEMBER 1972
11.5 μm

28 DECEMBER 1972
6.7 μm



29 DECEMBER 1972
11.5 μm

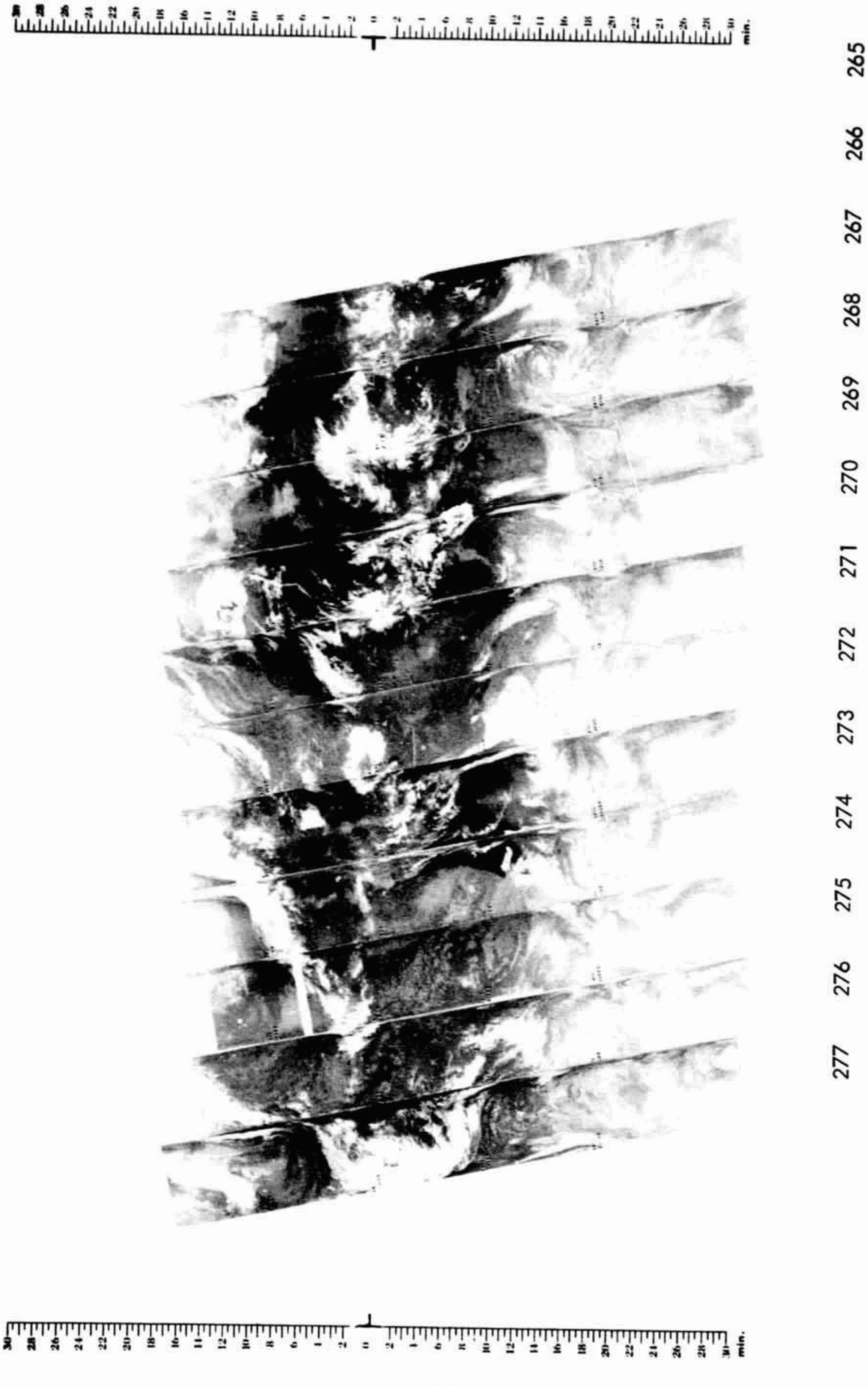
238 239 240 241 242 243 244 245 246 247 248 249 250 251

29 DECEMBER 1972
6.7 μm

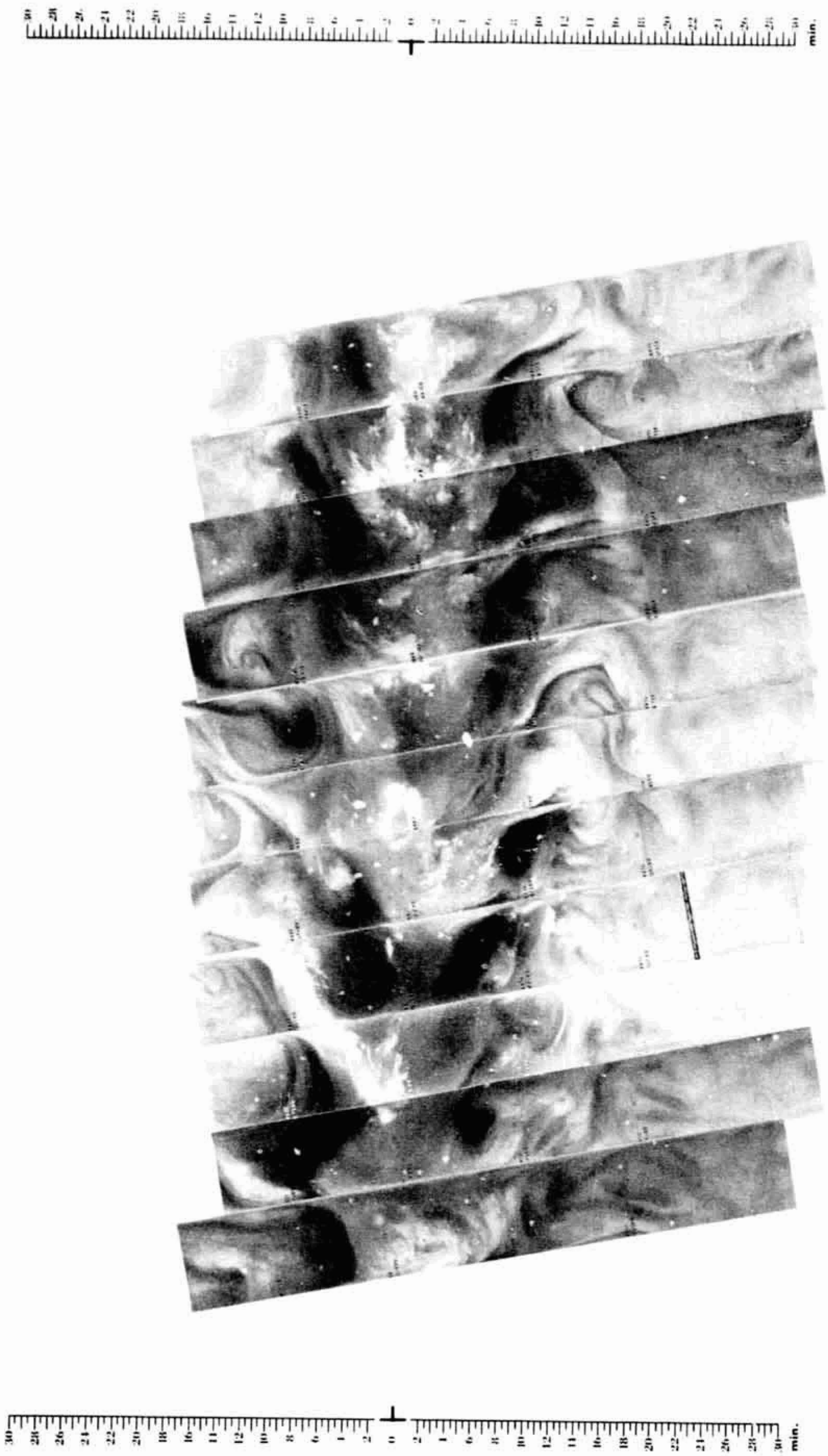
30 DECEMBER 1972
11.5 μm

252 253 254 255 256 257 258 259 260 261 262 263 264

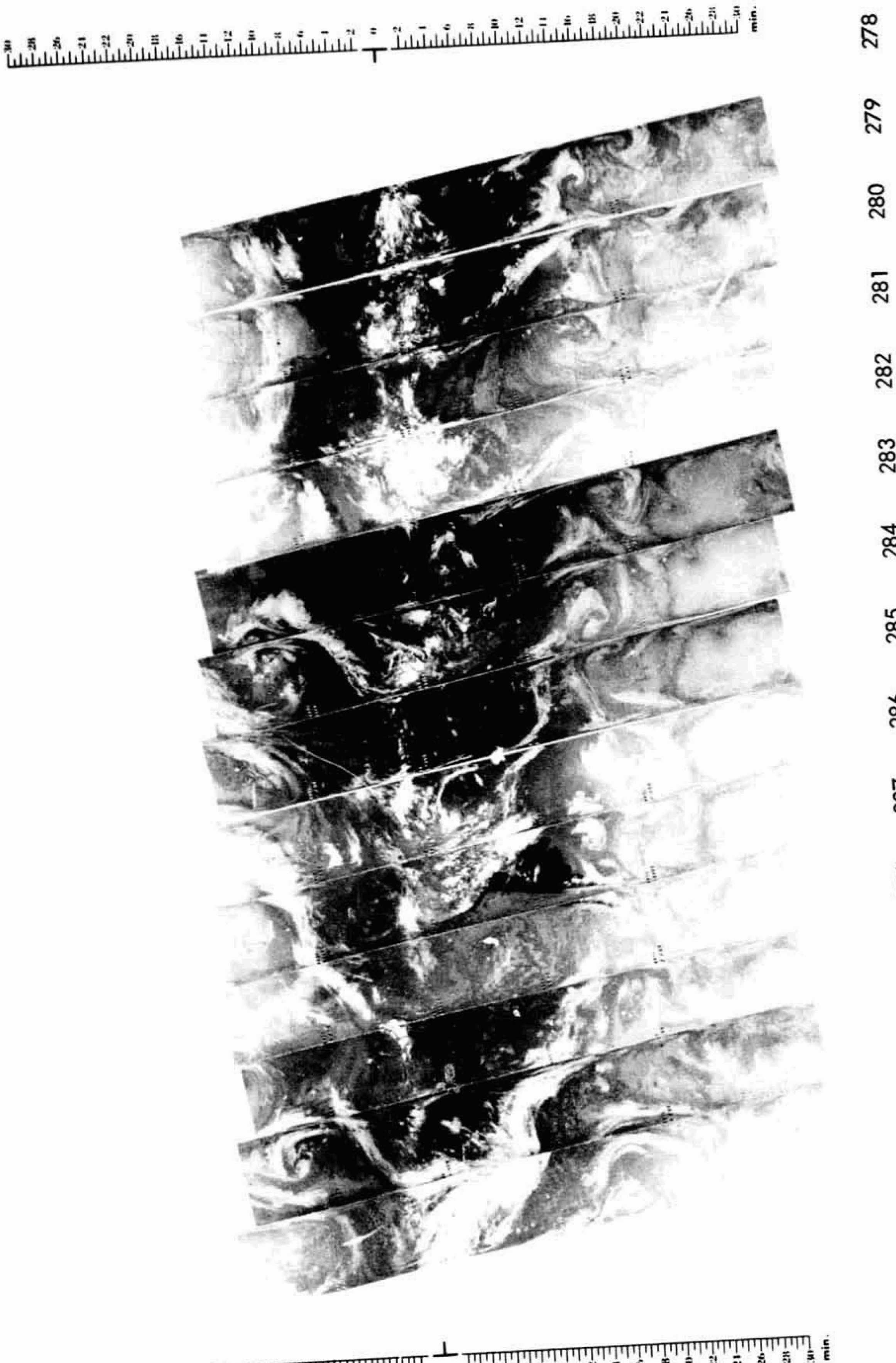
30 DECEMBER 1972
6.7 μm



31 DECEMBER 1972
11.5 μm



31 DECEMBER 1972
6.7 μm



1 JANUARY 1973
11.5 µm

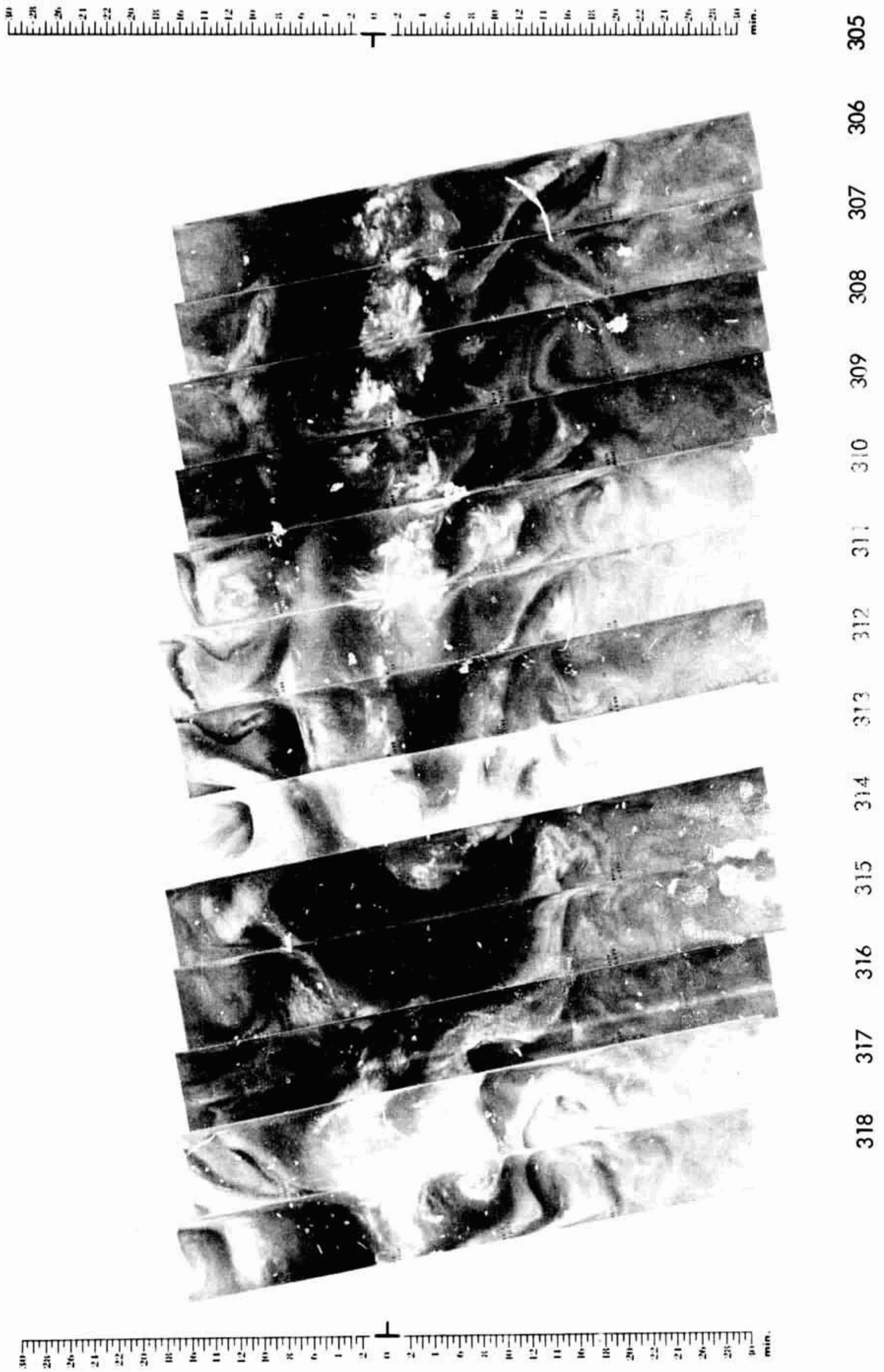
1 JANUARY 1973
6.7 µm

2 JANUARY 1973
11.5 μm

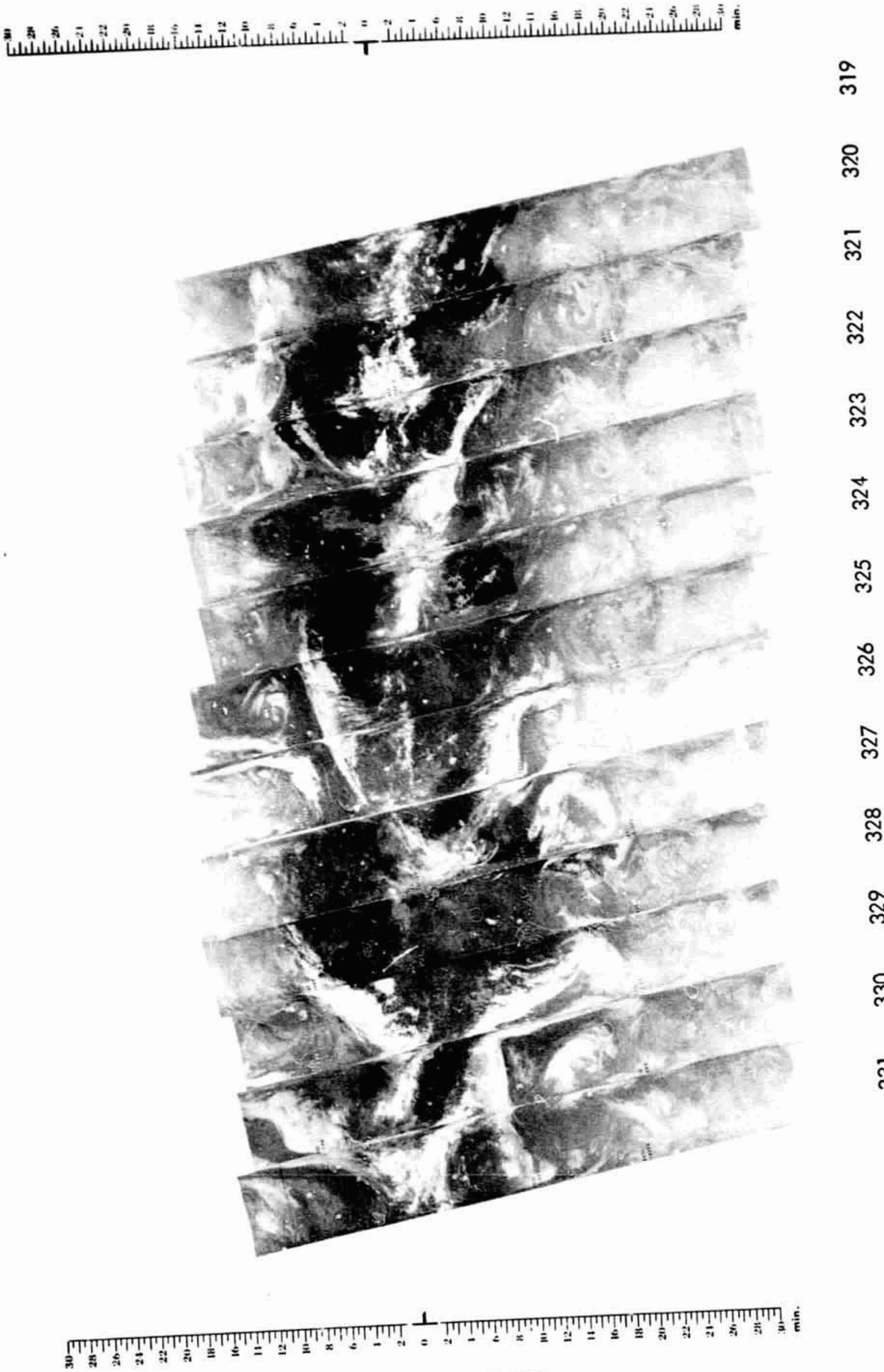
292 293 294 295 296 297 298 299 300 301 302 303 304

2 JANUARY 1973
6.7 μm

3 JANUARY 1973
11.5 µm

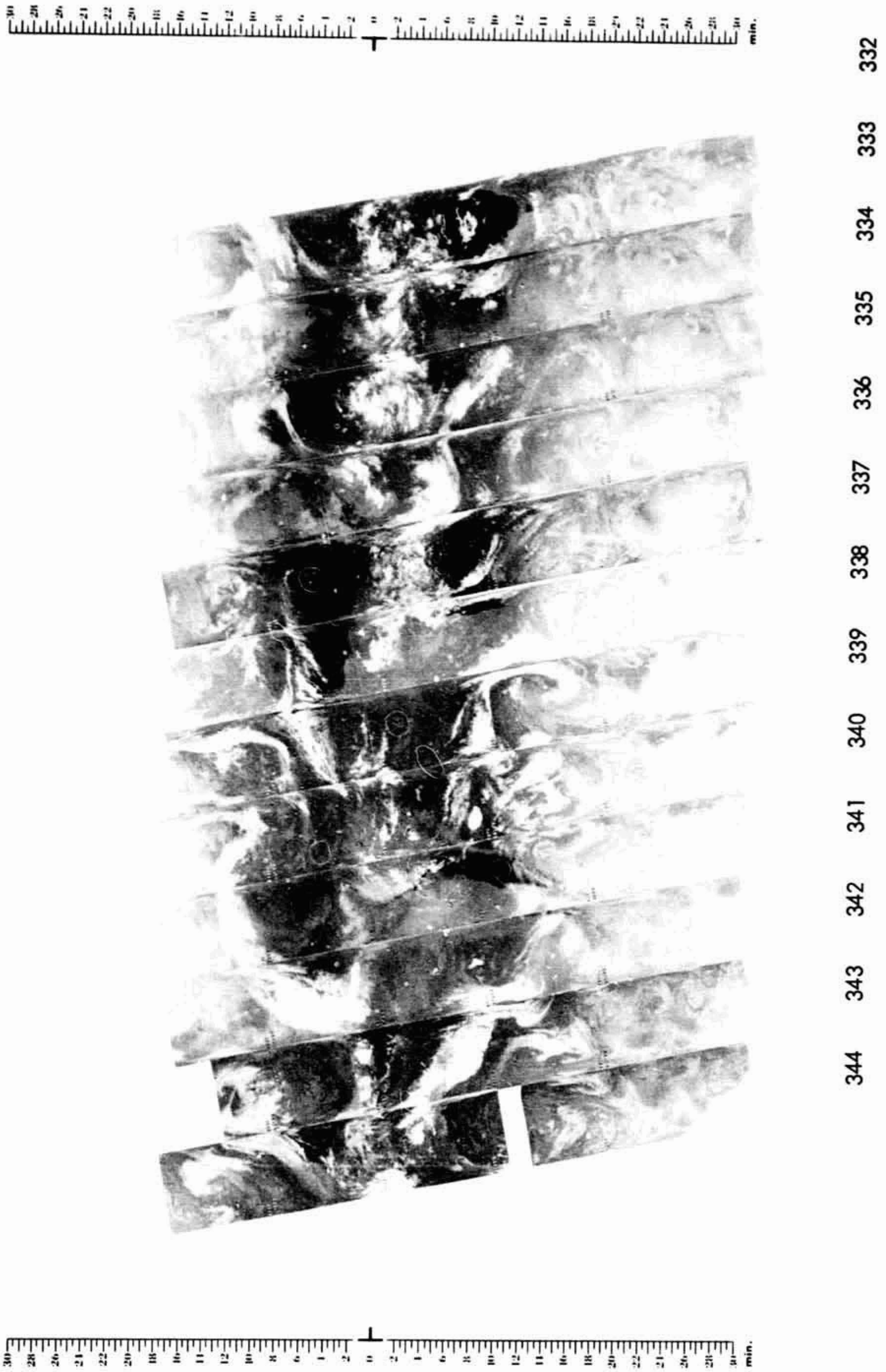


3 JANUARY 1973
6.7 μm

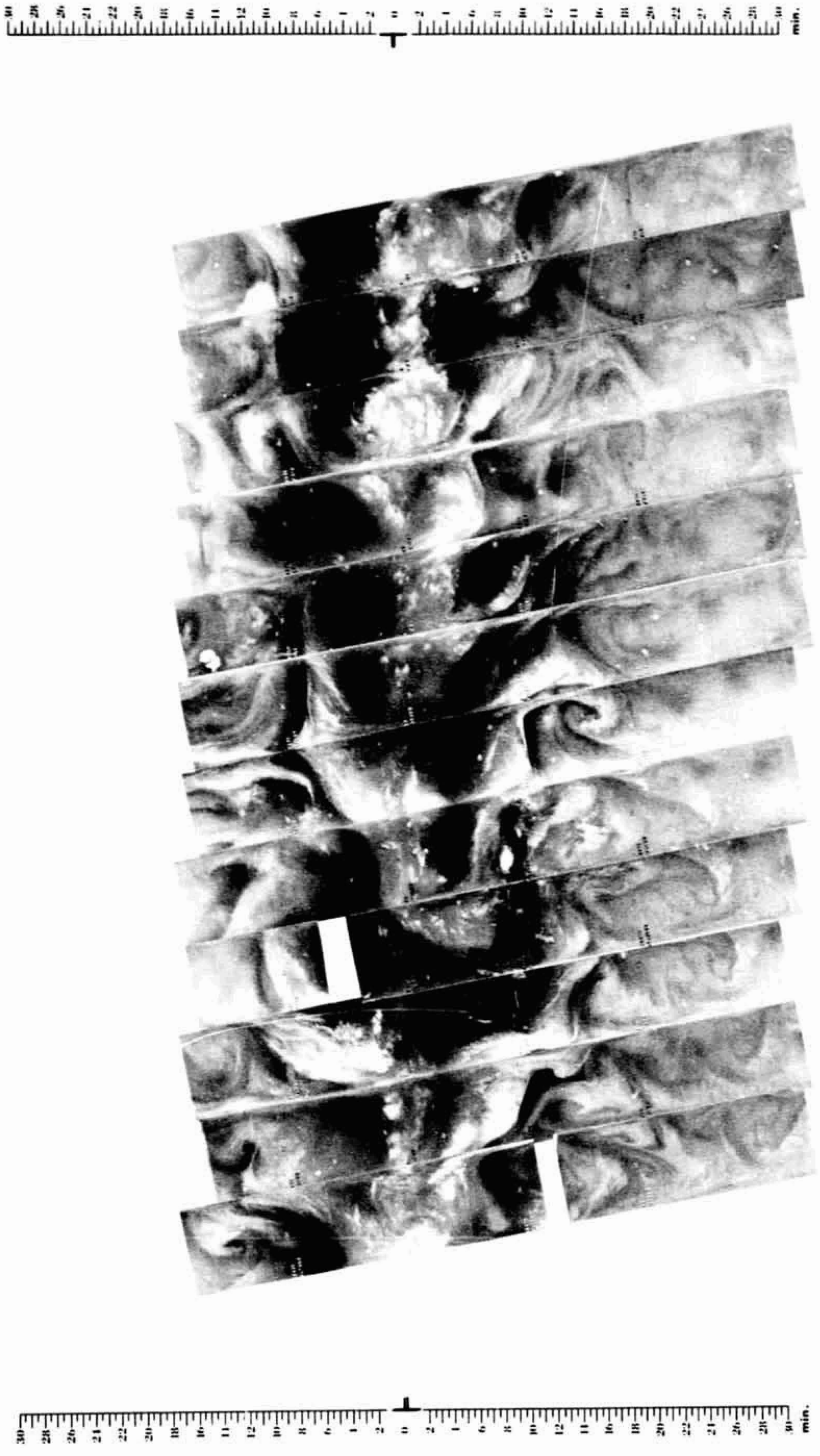


4 JANUARY 1973
11.5 μm

4 JANUARY 1973
6.7 μm

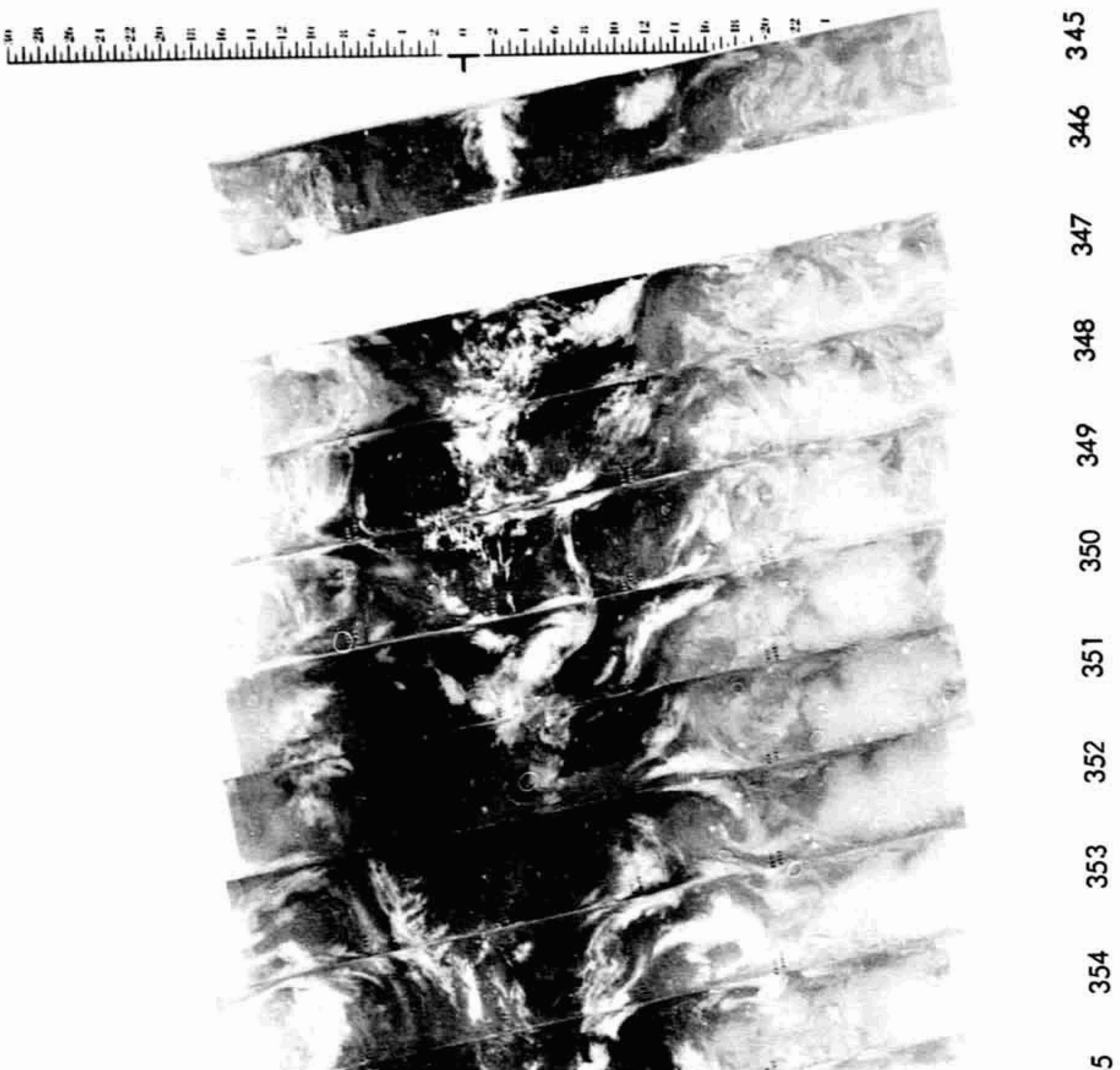


5 JANUARY 1973
11.5 μm



332 333 334 335 336 337 338 339 340 341 342 343 344

5 JANUARY 1973
6.7 μm



6 JANUARY 1973
11.5 μm

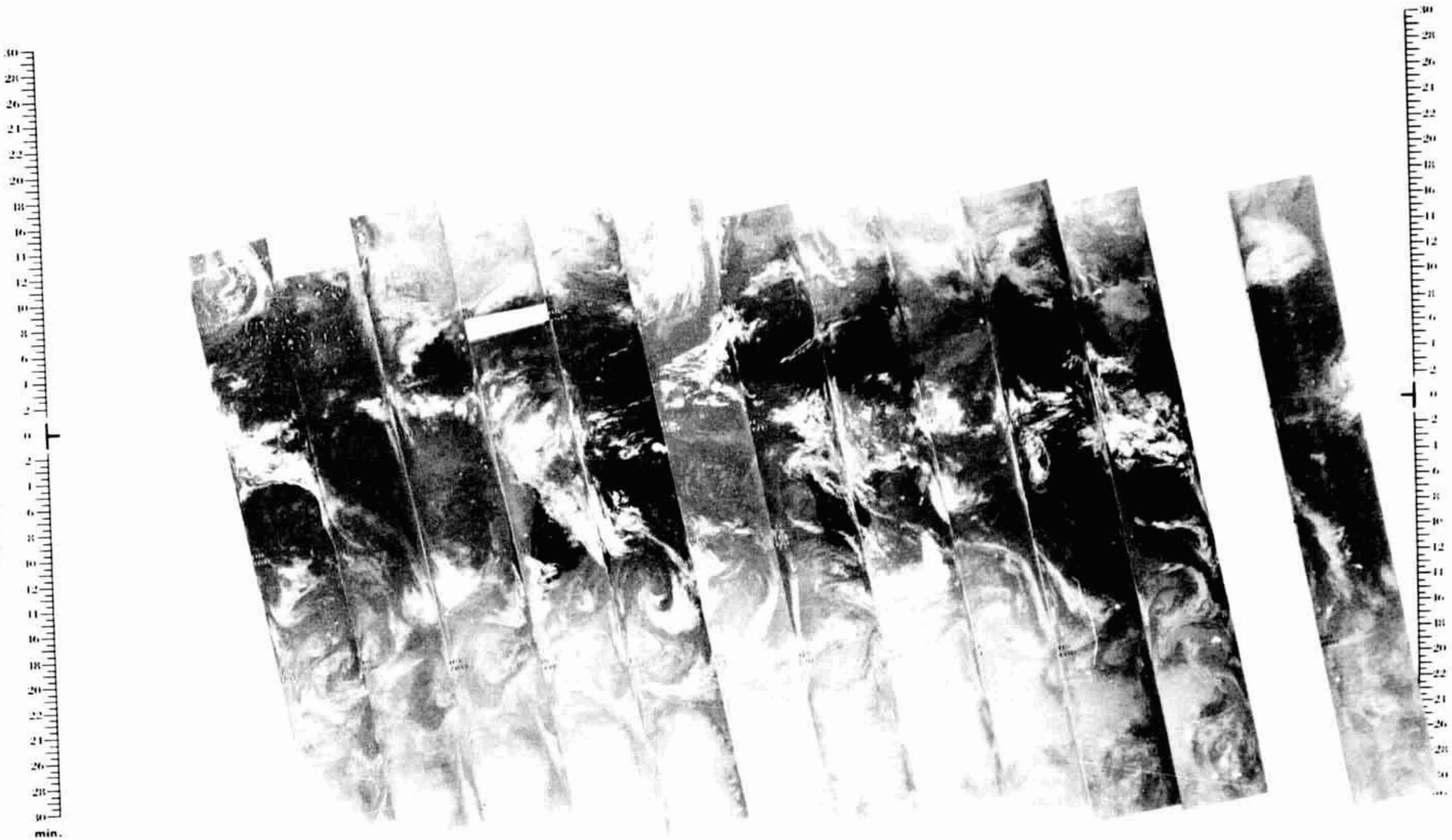
6 JANUARY 1973
6.7 μm

359 360 361 362 363 364 365 366 367 368 369 370 371

7 JANUARY 1973
11.5 μm

359 360 361 362 363 364 365 366 367 368 369 370 371

7 JANUARY 1973
6.7 μm



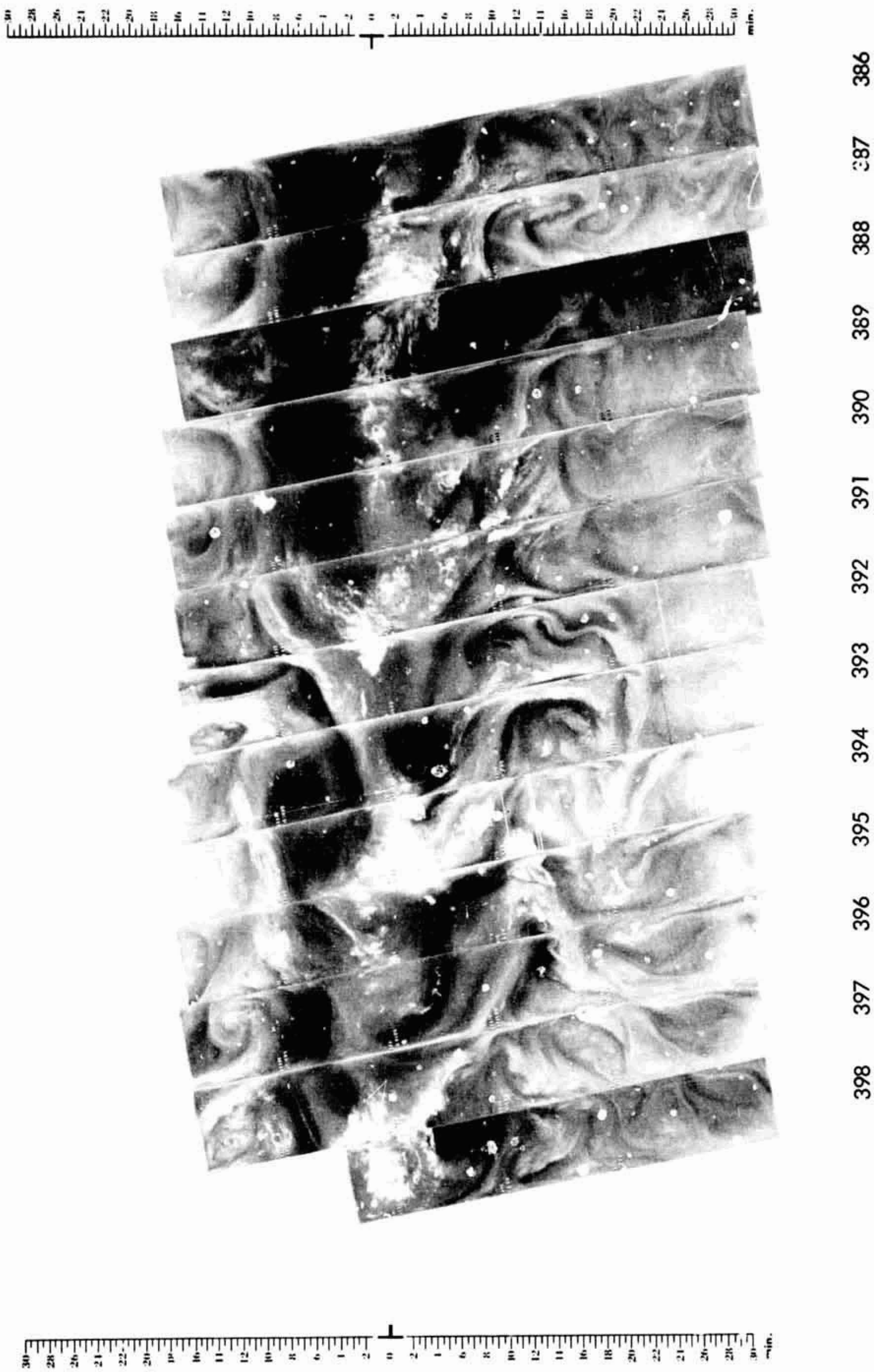
385 384 383 382 381 380 379 378 377 376 375 374 373 372

8 JANUARY 1973

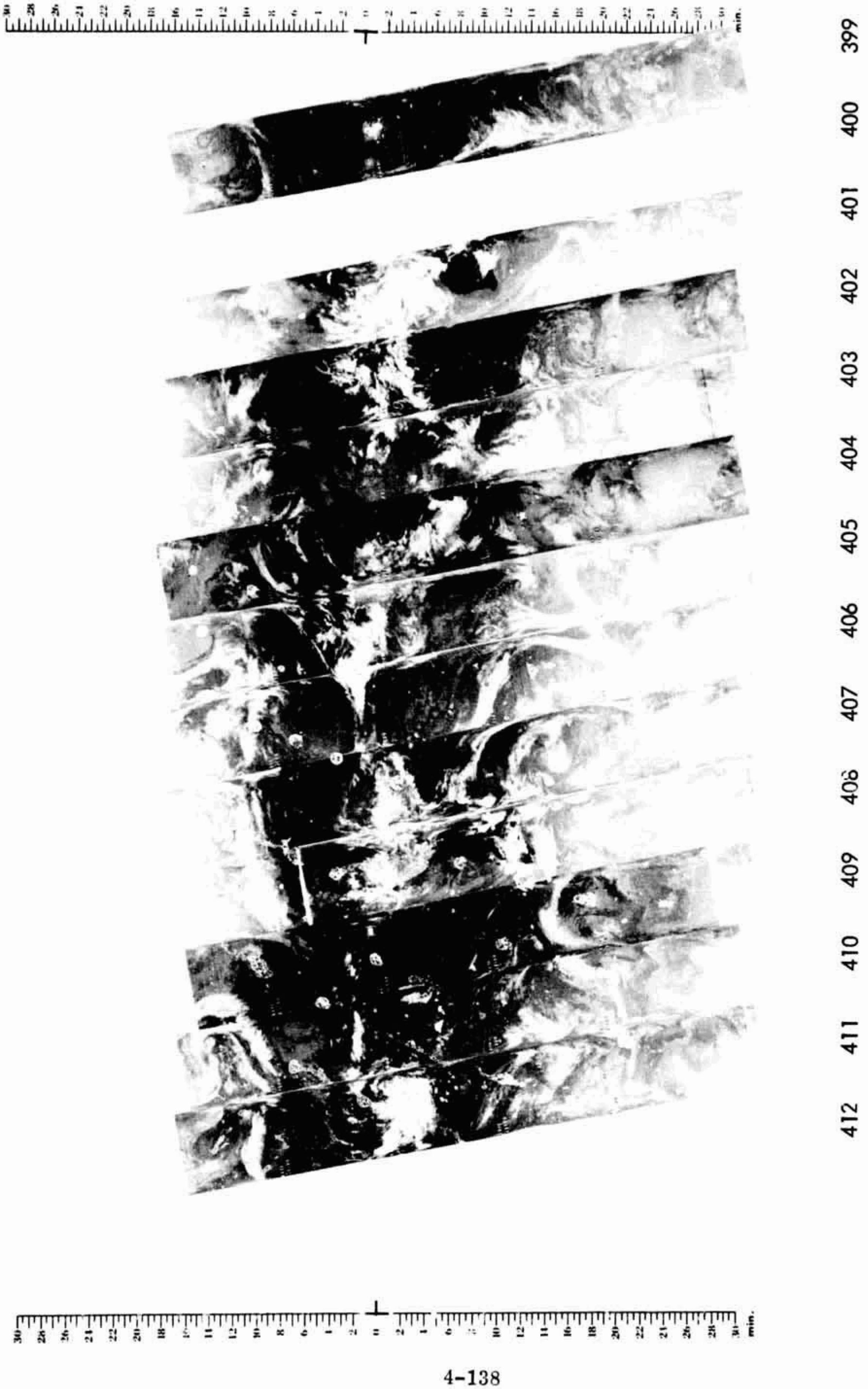
11.5 μm

8 JANUARY 1973
6.7 μm

9 JANUARY 1973
11.5 μm

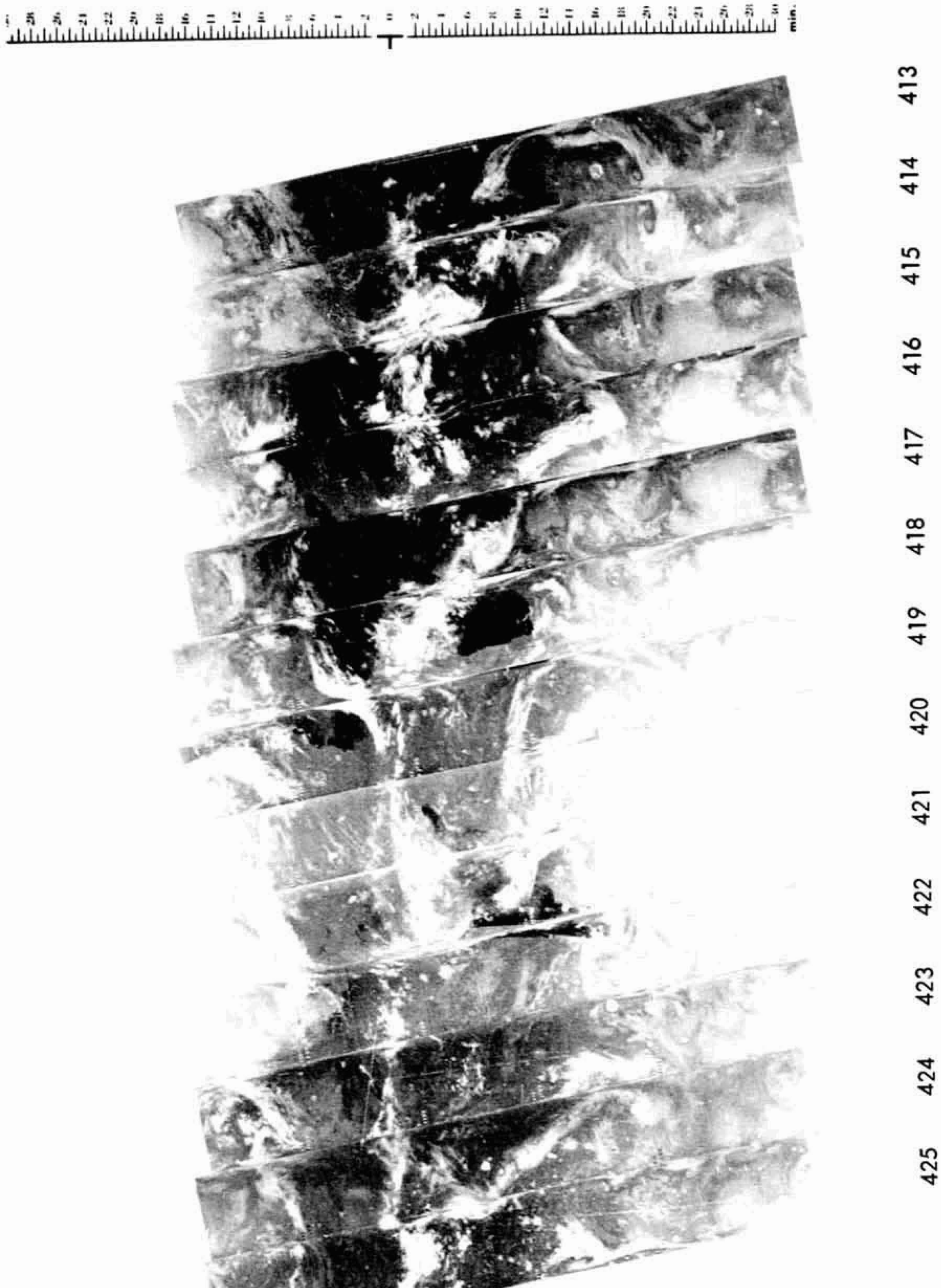


9 JANUARY 19/3
6.7 µm

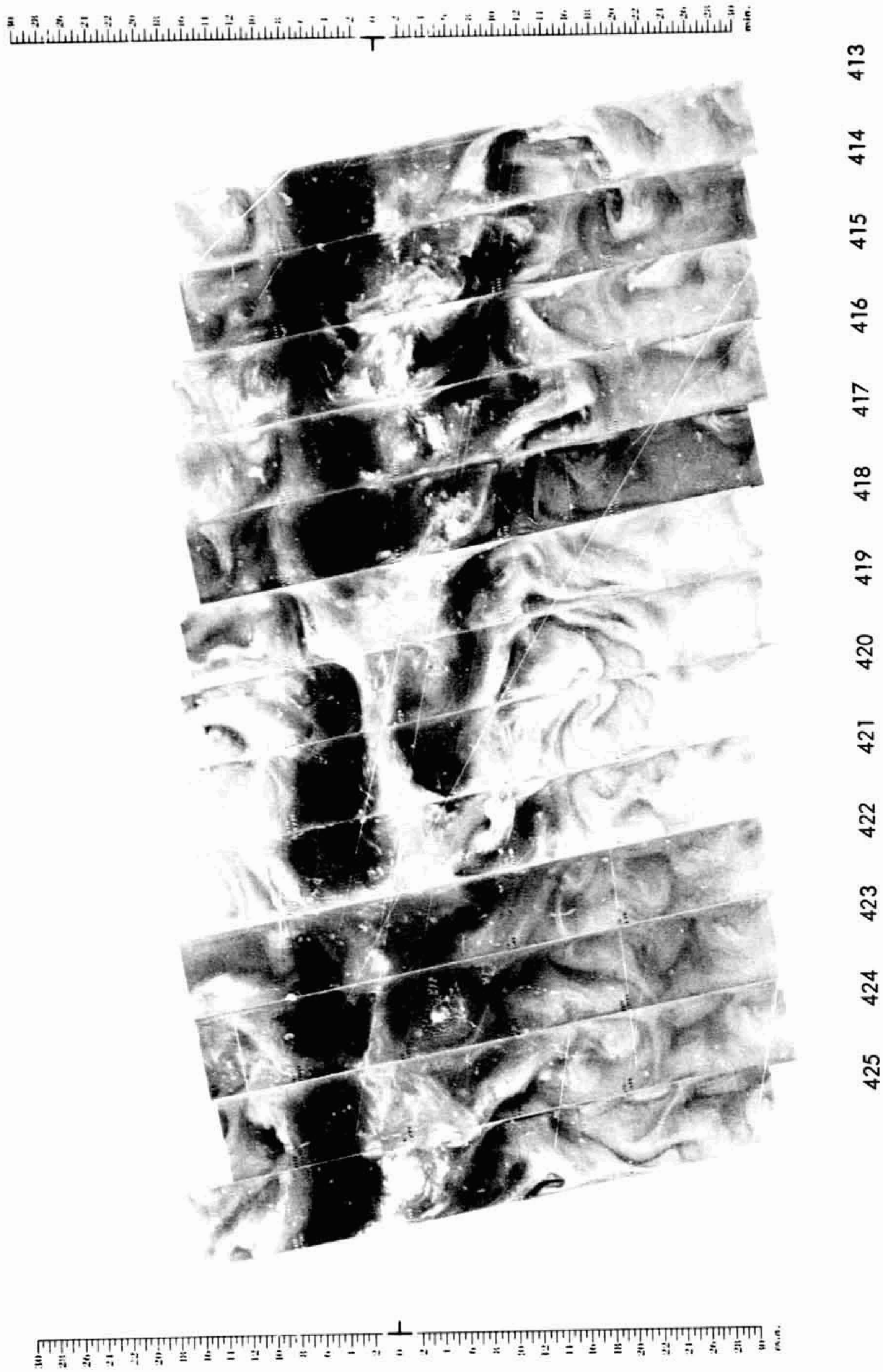


10 JANUARY 1973
11.5 μm

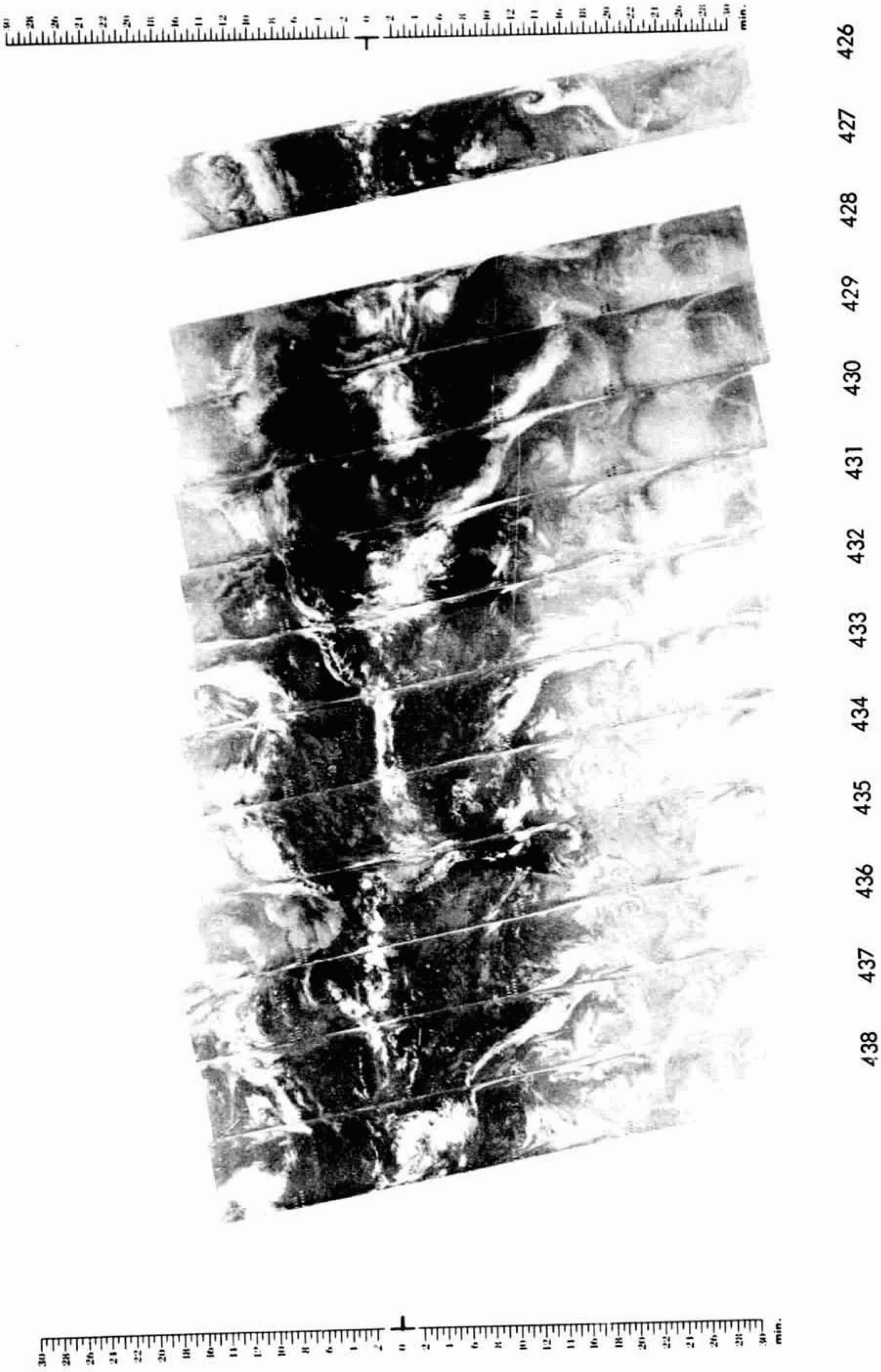
10 JANUARY 1973
6.7 µm



11 JANUARY 1973
11.5 μm

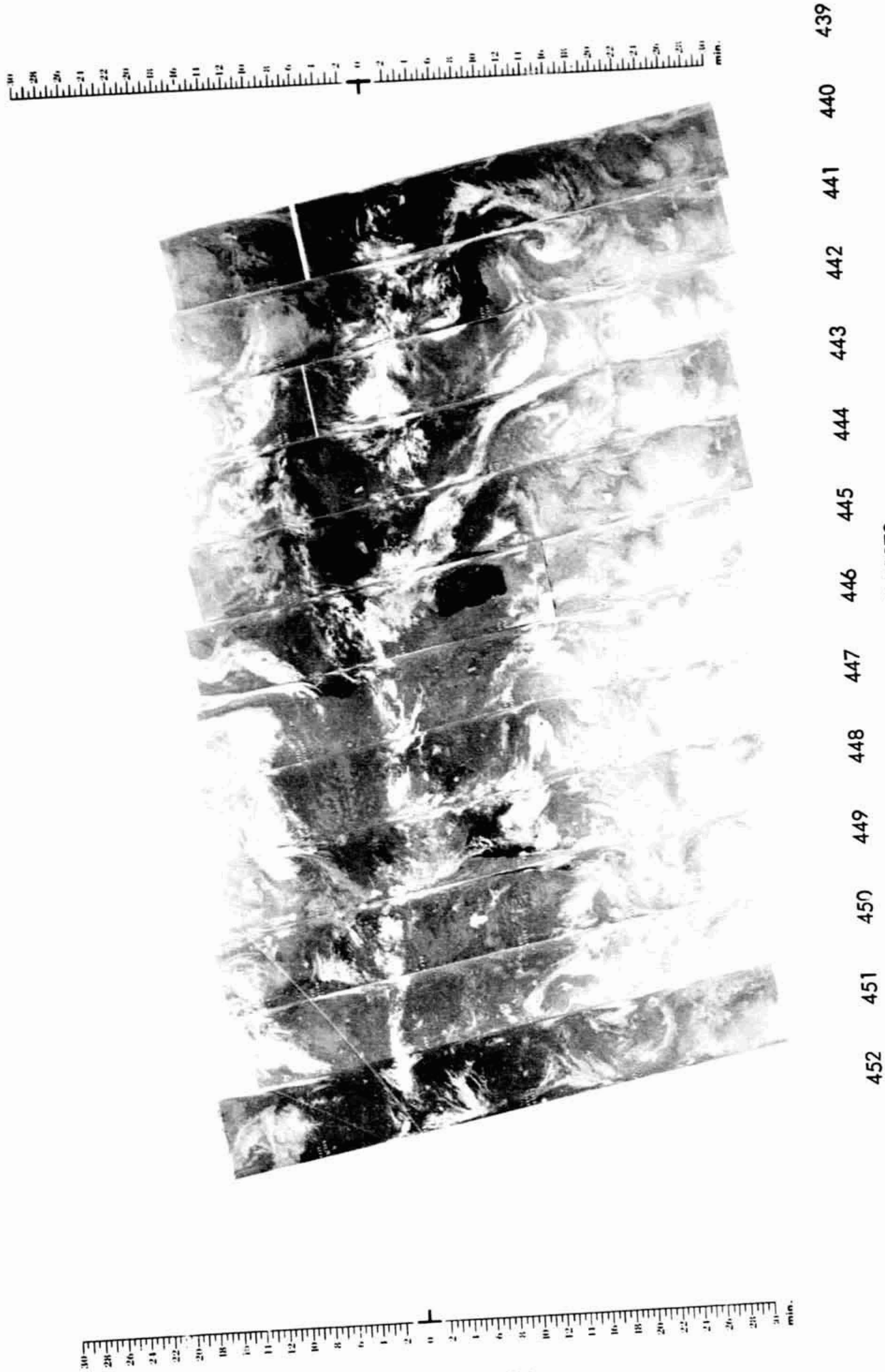


11 JANUARY 1973
6.7 μm

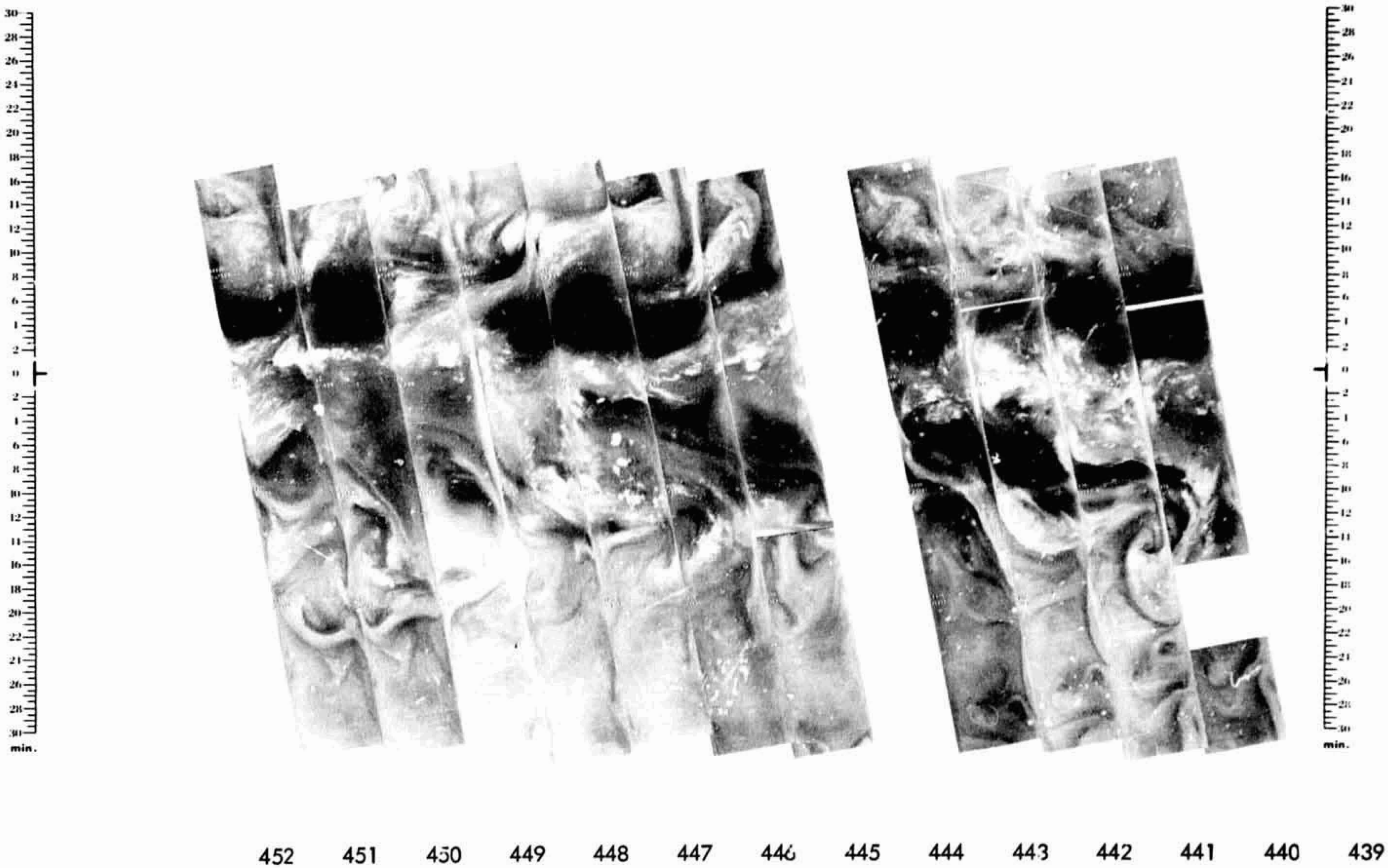


12 JANUARY 1973
11.5 μm

12 JANUARY 1973
6.7 μm

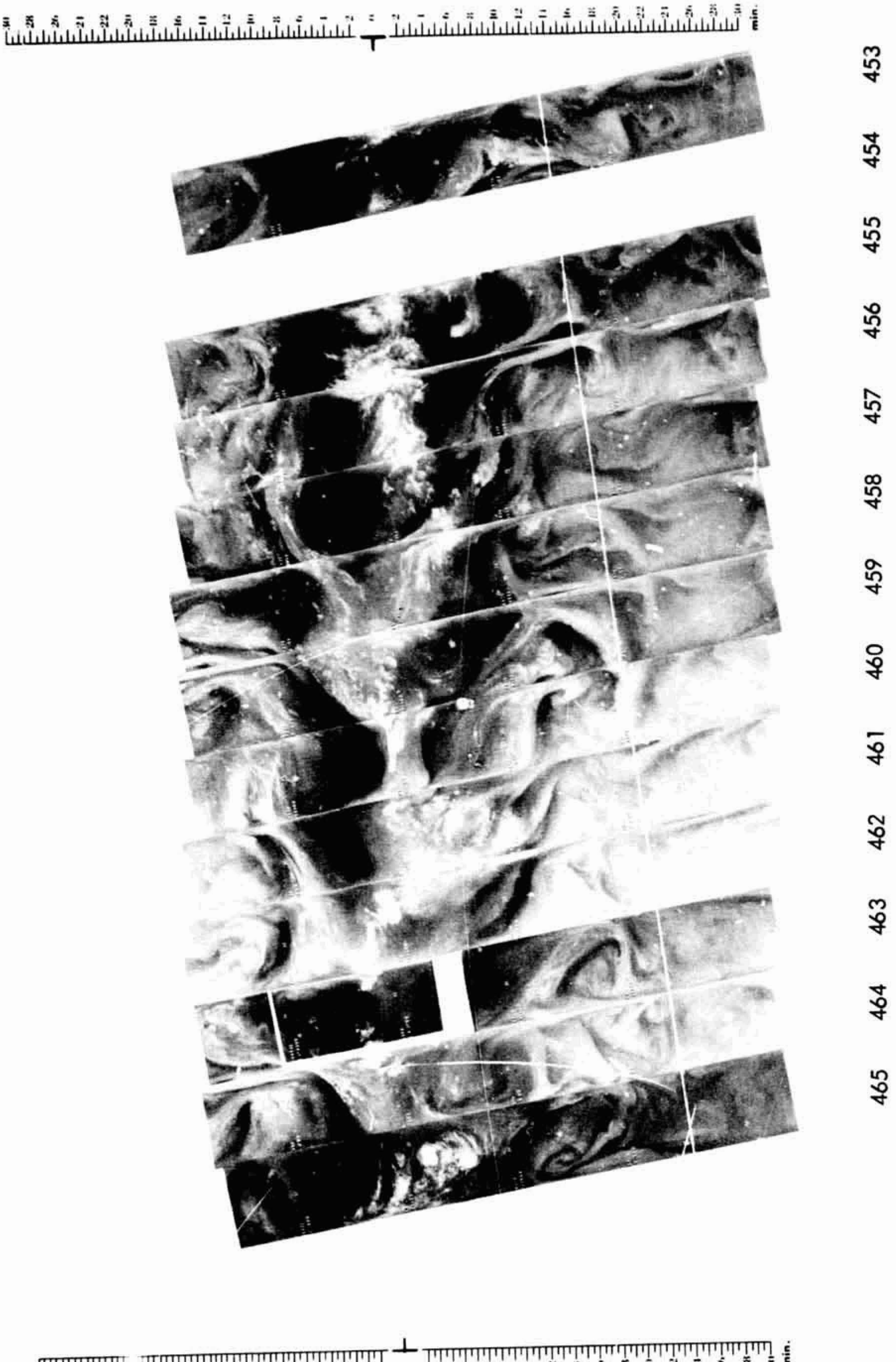


13 JANUARY 1973
11.5 μm

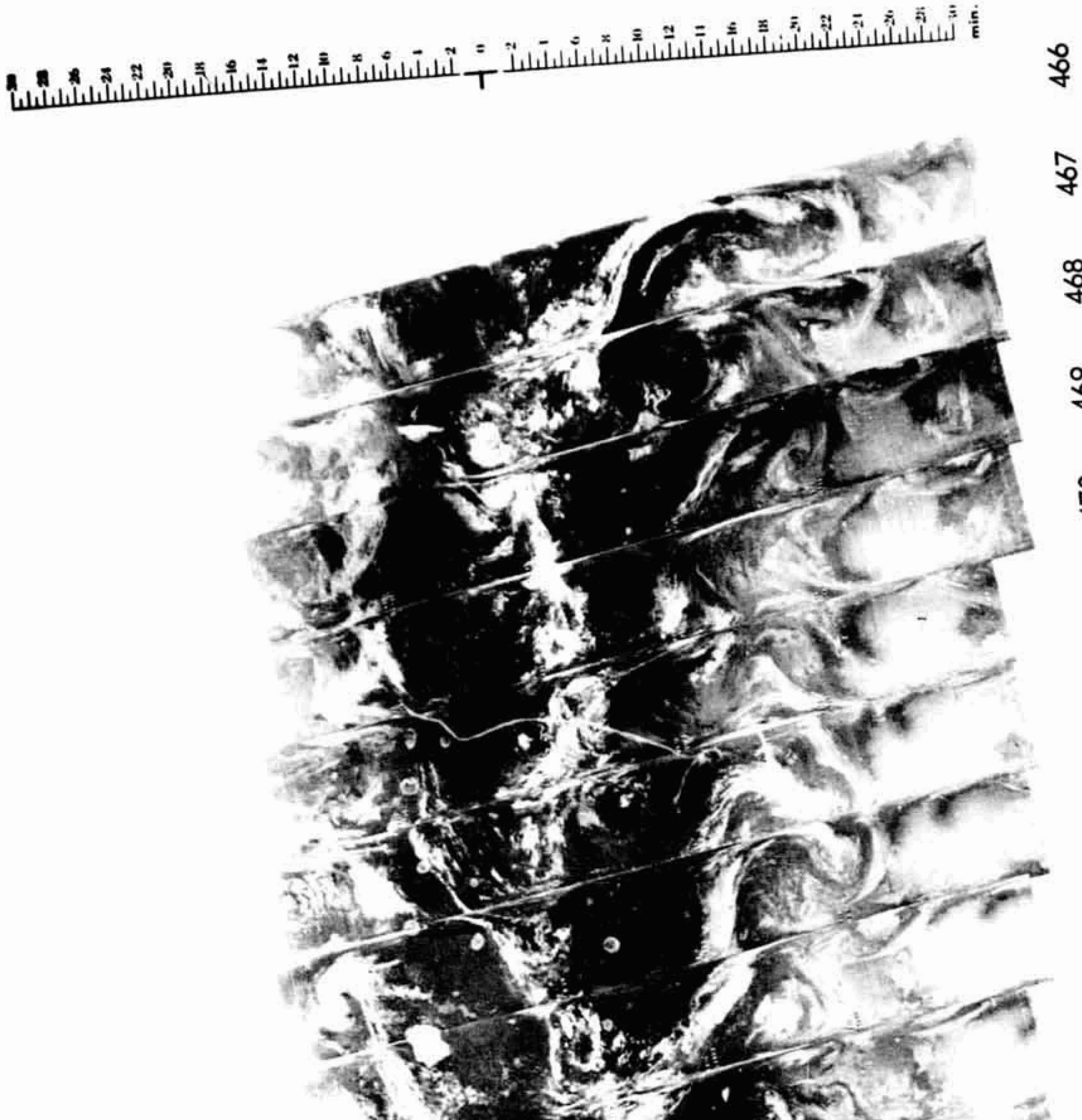


13 JANUARY 1973
6.7 μm

14 JANUARY 1973
11.5 μm



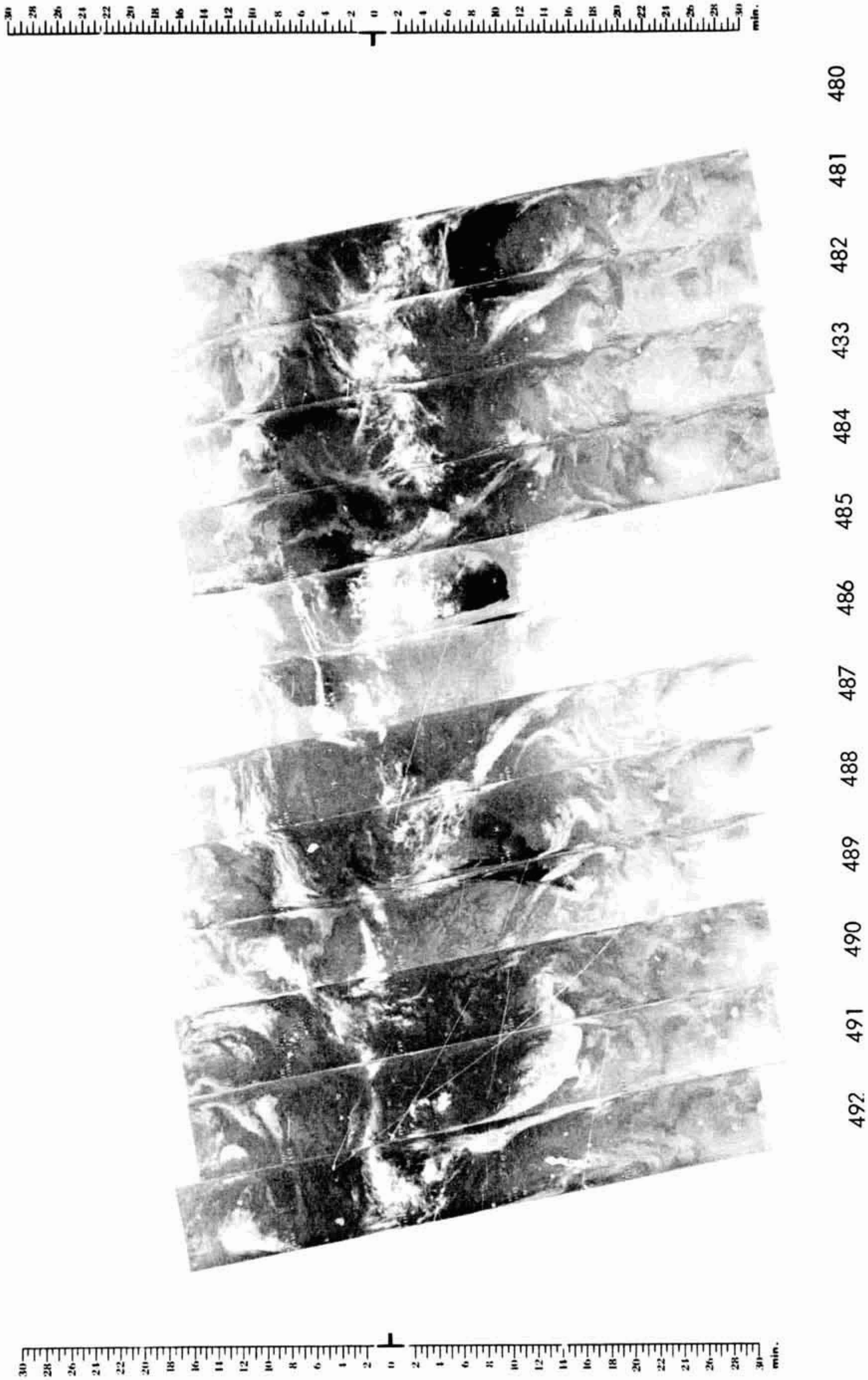
14 JANUARY 1973
6.7 µm



15 JANUARY 1973

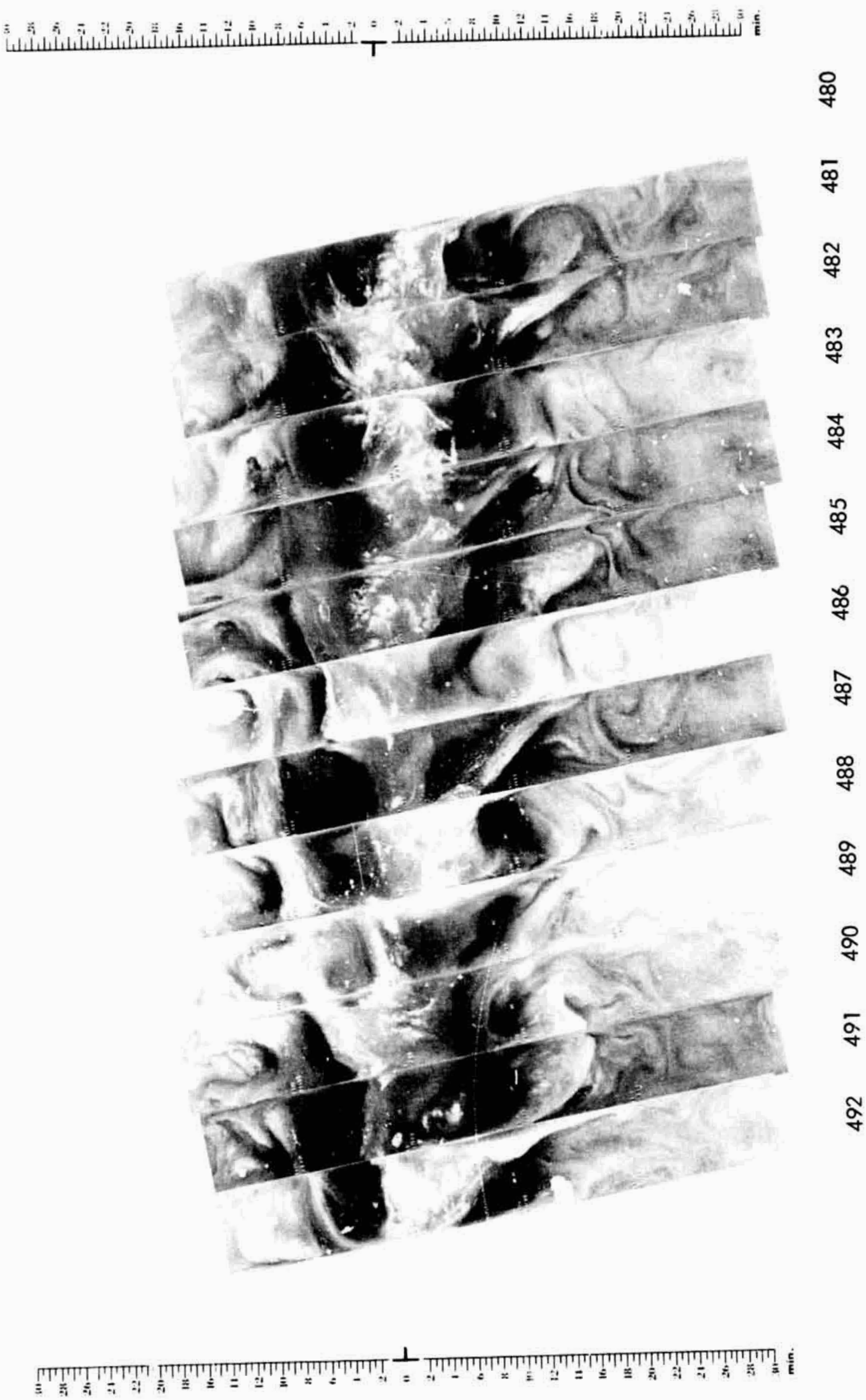
11.5 μm

15 JANUARY 1973
6.7 μm



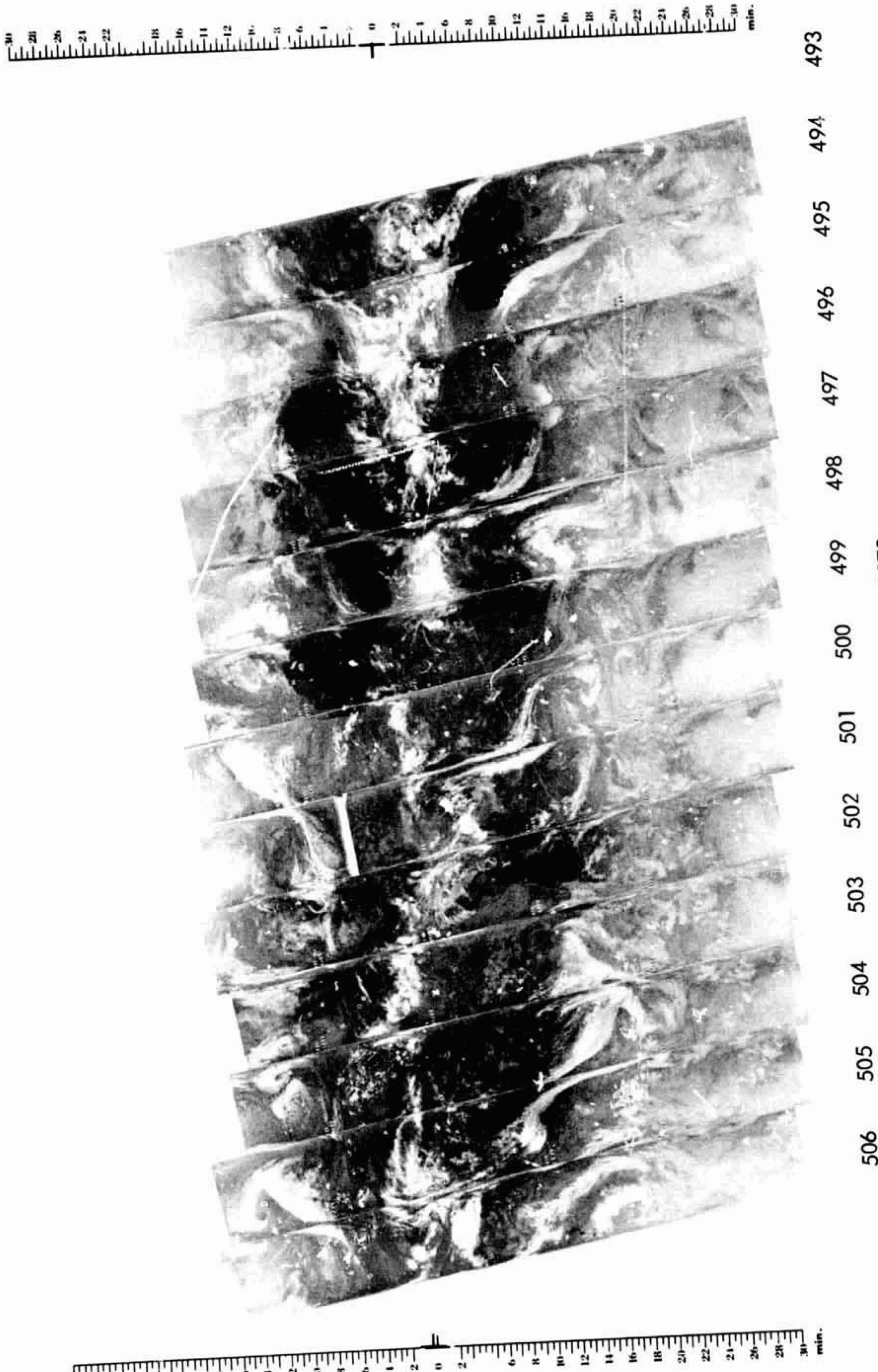
16 JANUARY 1973

11.5 μm



16 JANUARY 1973

6.7 µm

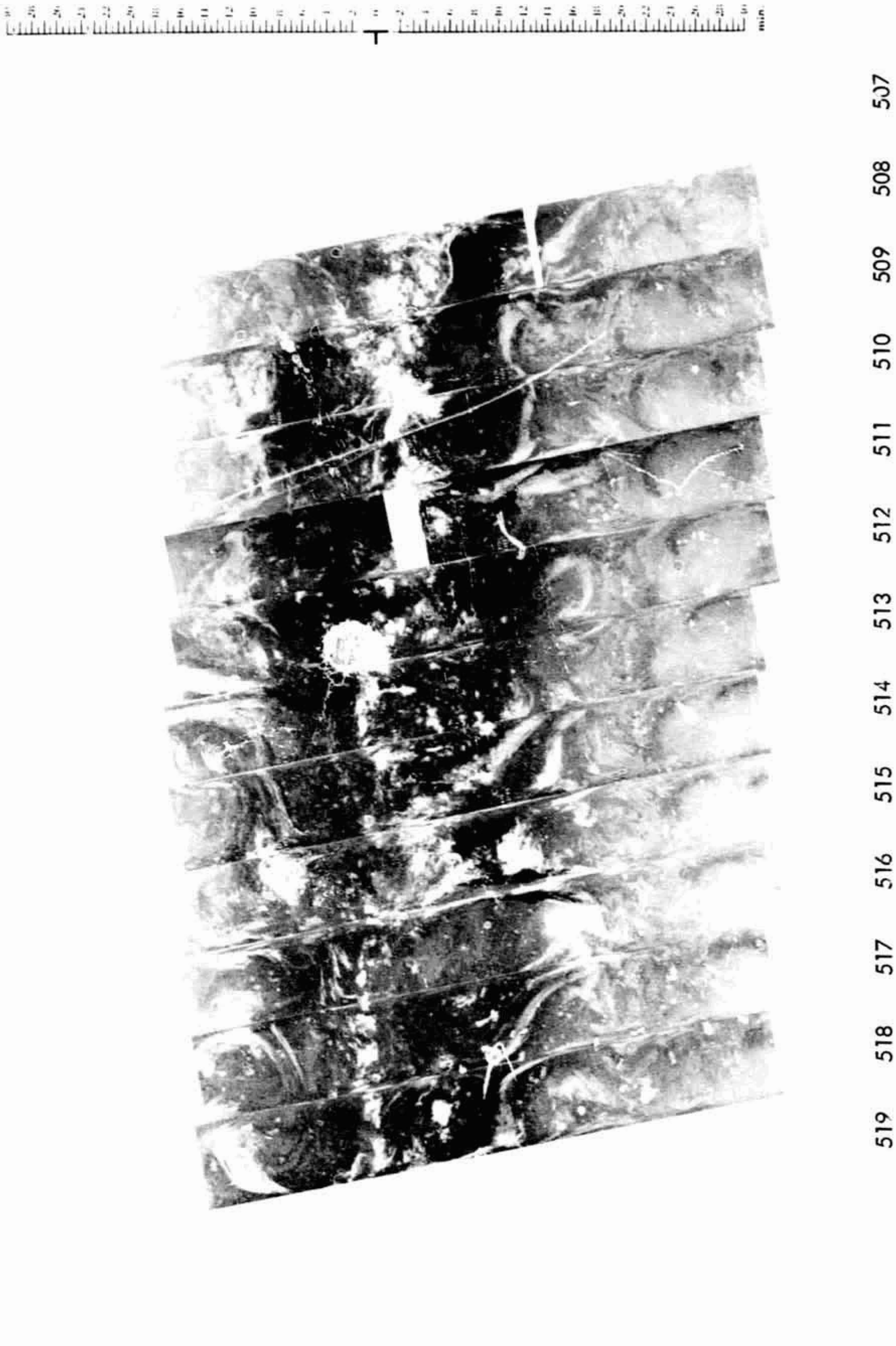


17 JANUARY 1973

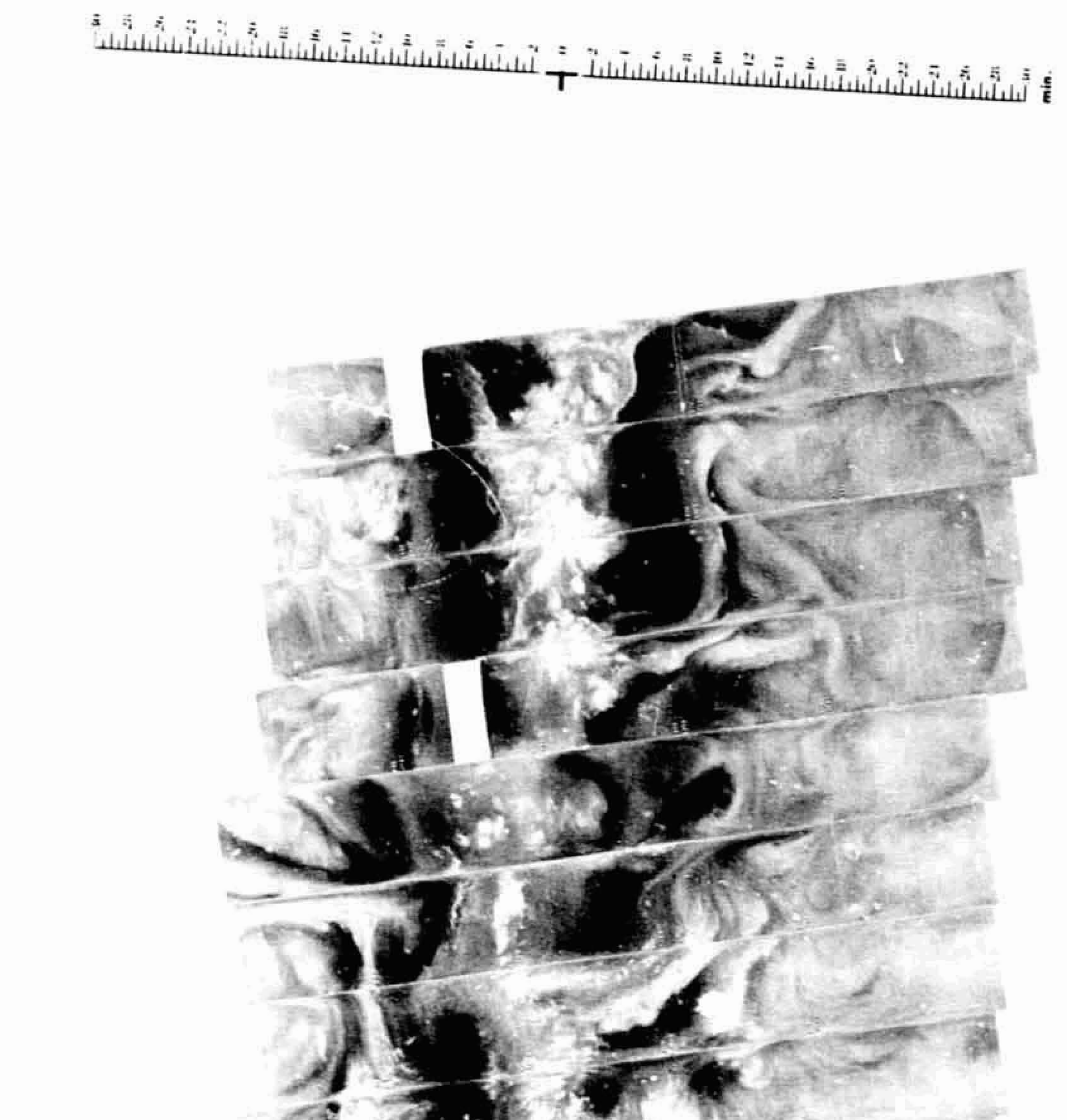
11.5 μm

17 JANUARY 1973

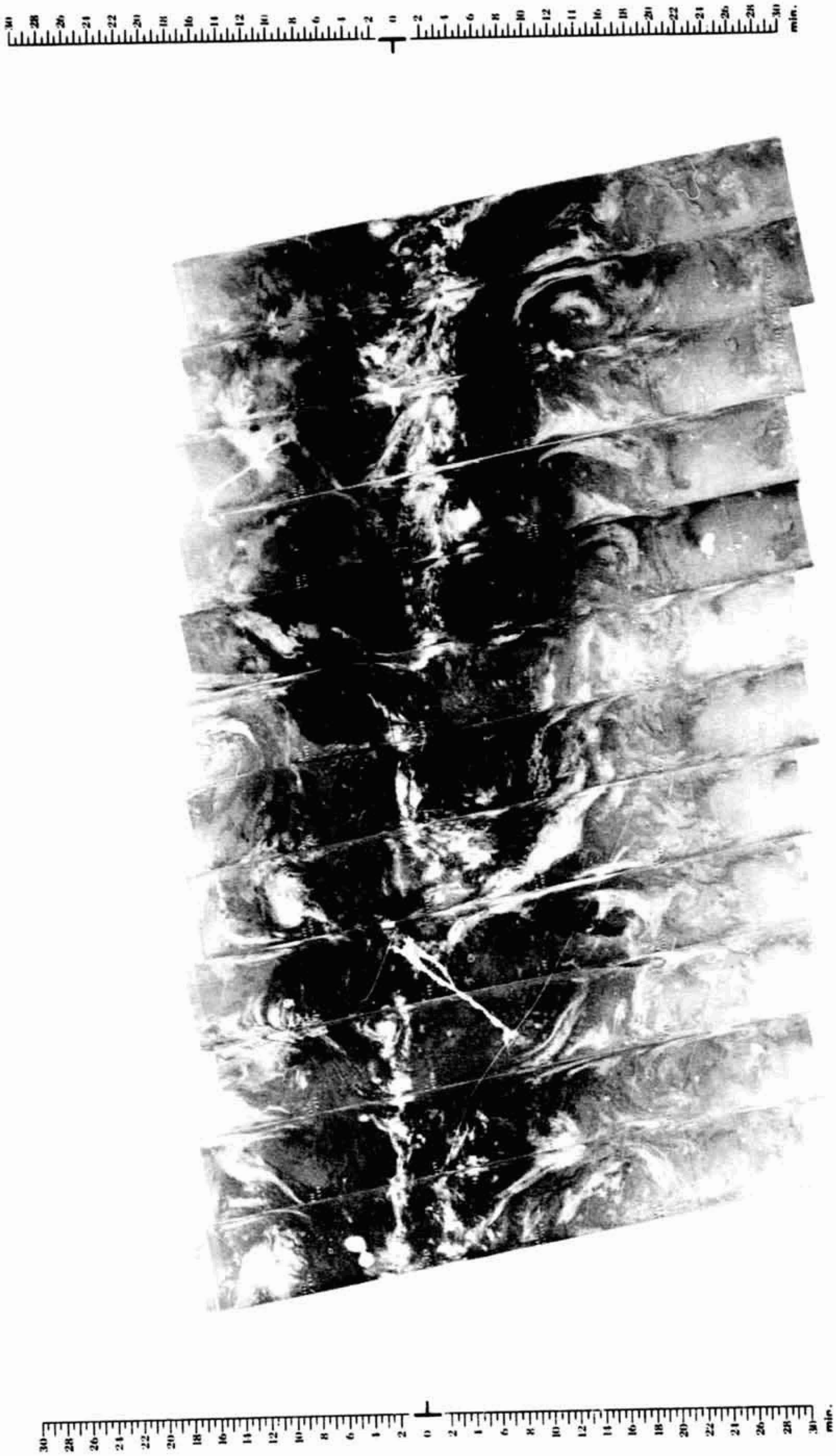
6.7 μm



18 JANUARY 1973
11.5 μm



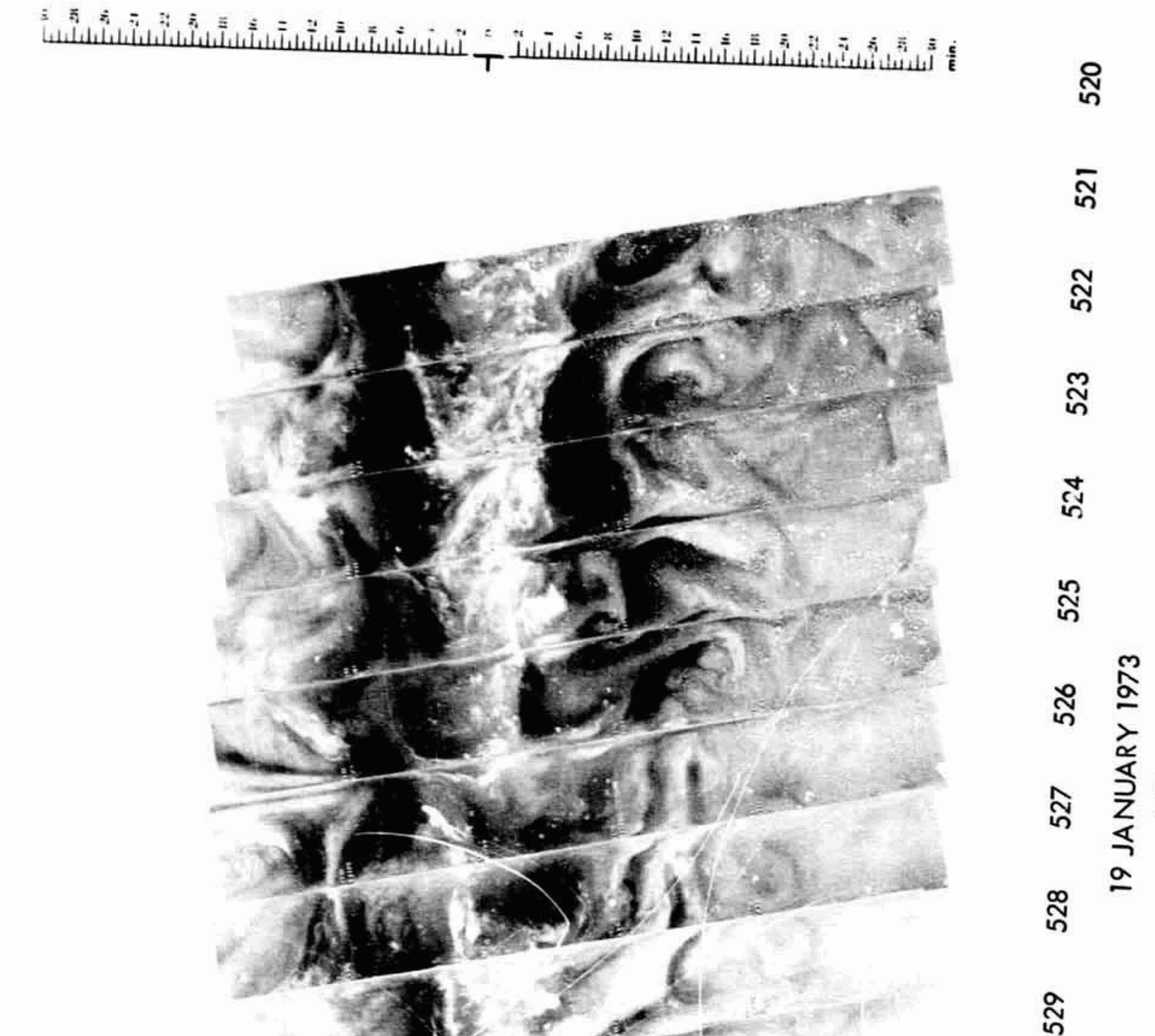
18 JANUARY 1973
6.7 μm



520 521 522 523 524 525 526 527 528 529 530 531 532

19 JANUARY 1973

11.5 μm


520
521
522
523
524
525
526
527
528
529
530
531
532
19 JANUARY 1973
6.7 μm

20 JANUARY 1973

11.5 μm

533 534 535 536 537 538 539 540 541 542 543 544 545 546

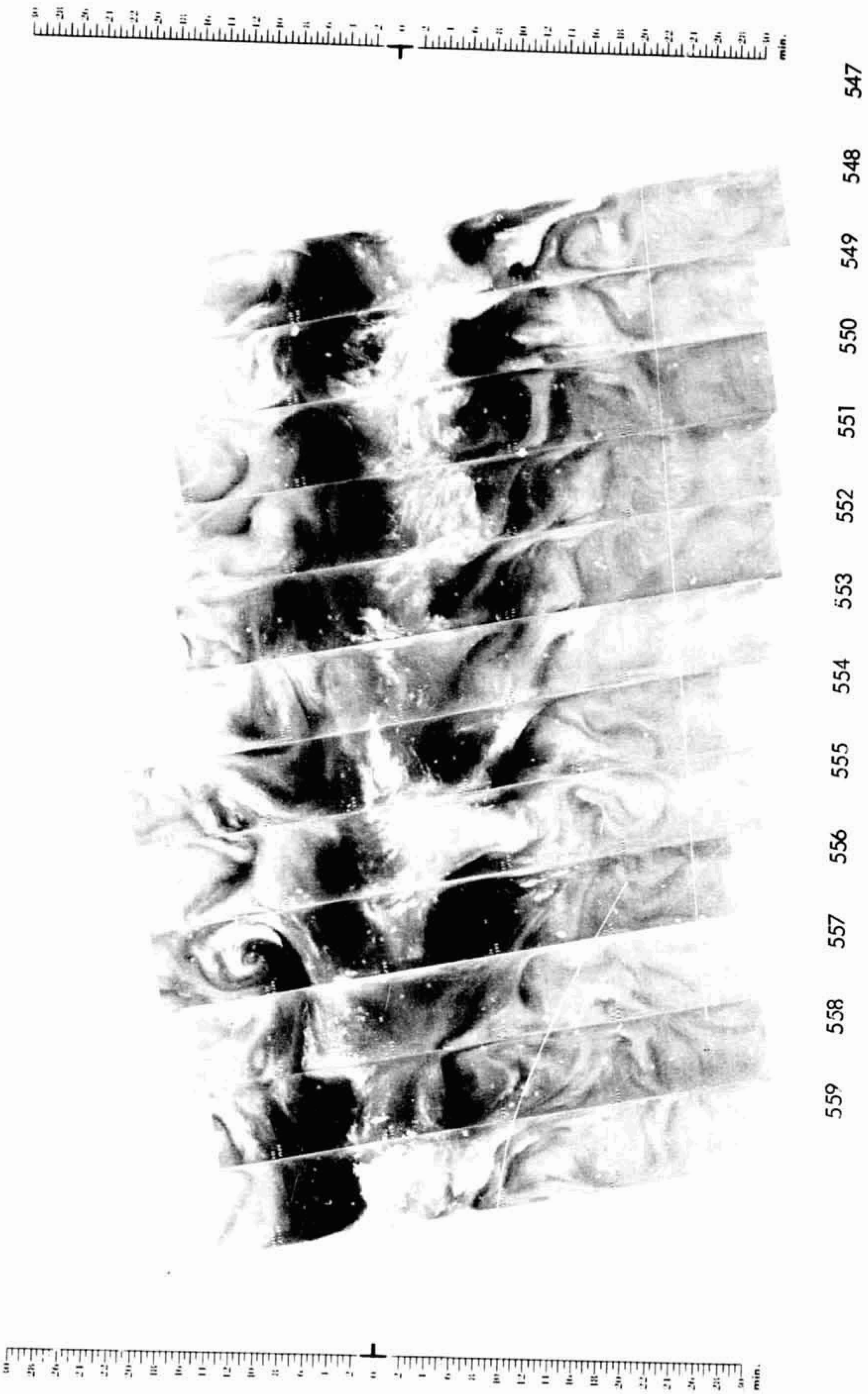
20 JANUARY 1973

6.7 µm

559 558 557 556 555 554 553 552 551 550 549 548 547

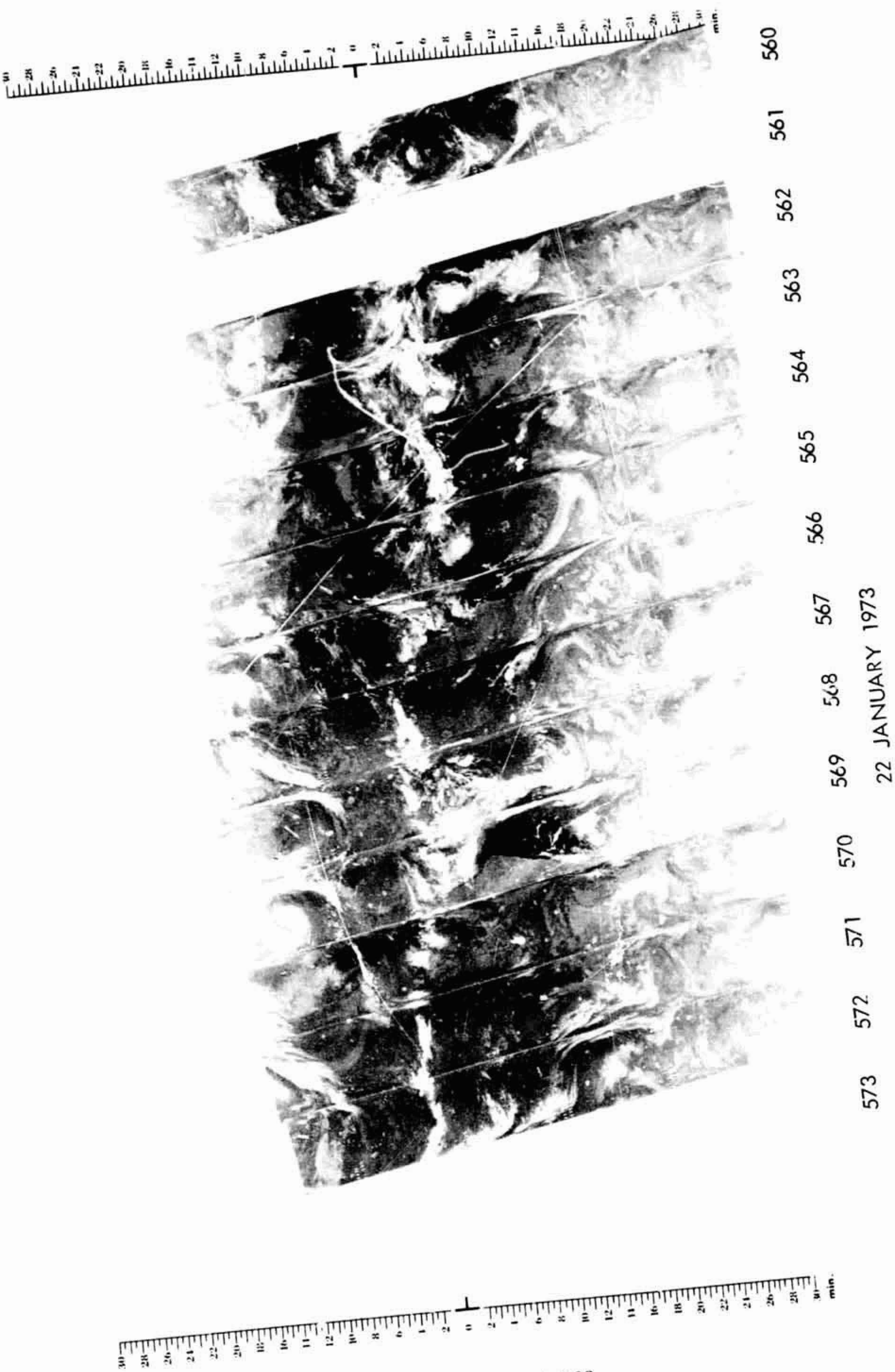
21 JANUARY 1973

11.5 μm



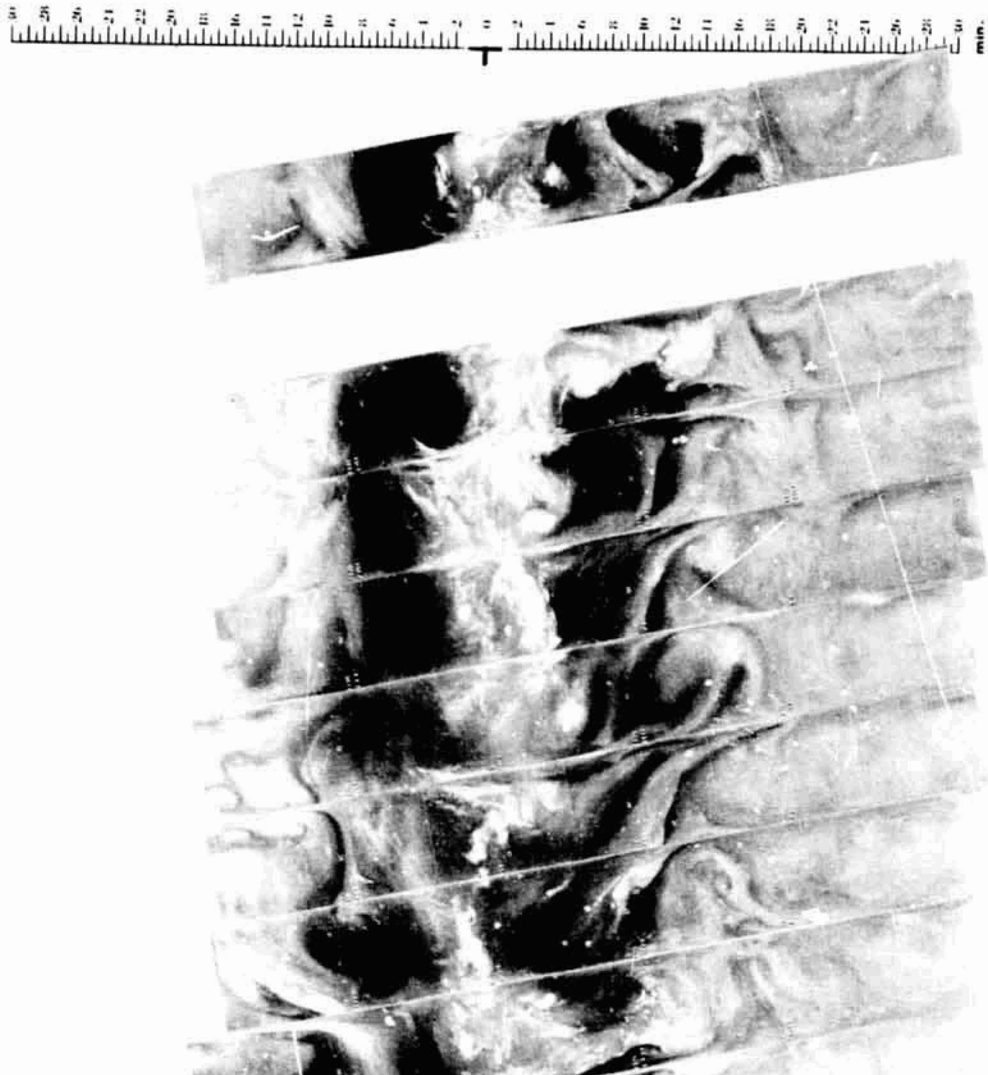
21 JANUARY 1973

6.7 µm



22 JANUARY 1973

11.5 µm



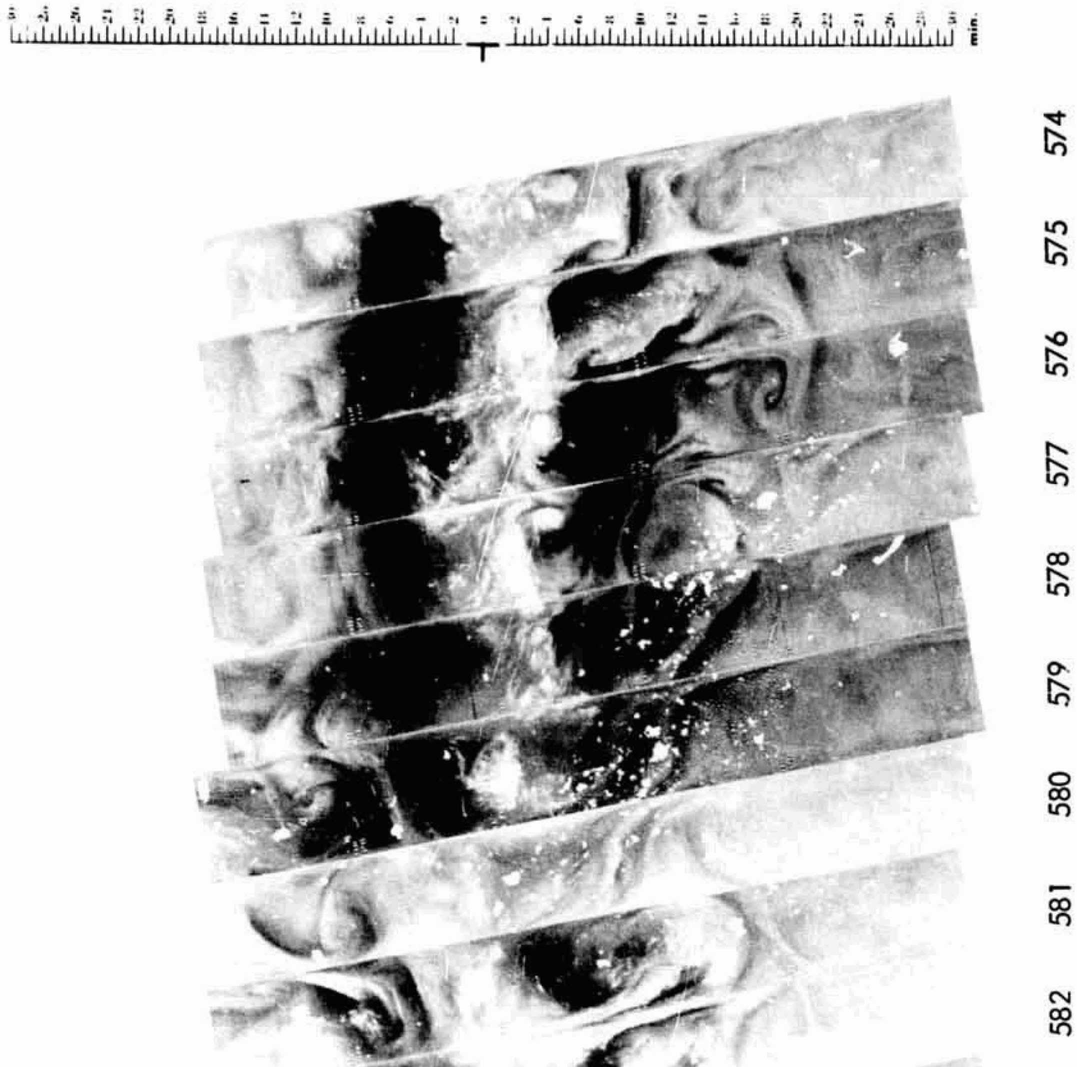
560 561 562 563 564 565 566 567 568 569 570 571 572 573

22 JANUARY 1973

6.7 μm

23 JANUARY 1973

11.5 μm



23 JANUARY 1973

6.7 μm

24 JANUARY 1973
11.5 μm

24 JANUARY 1973
6.7 μm

25 JANUARY 1973

11.5 μm

C-4

601 602 603 604 605 606 607 608 609 610 611 612 613

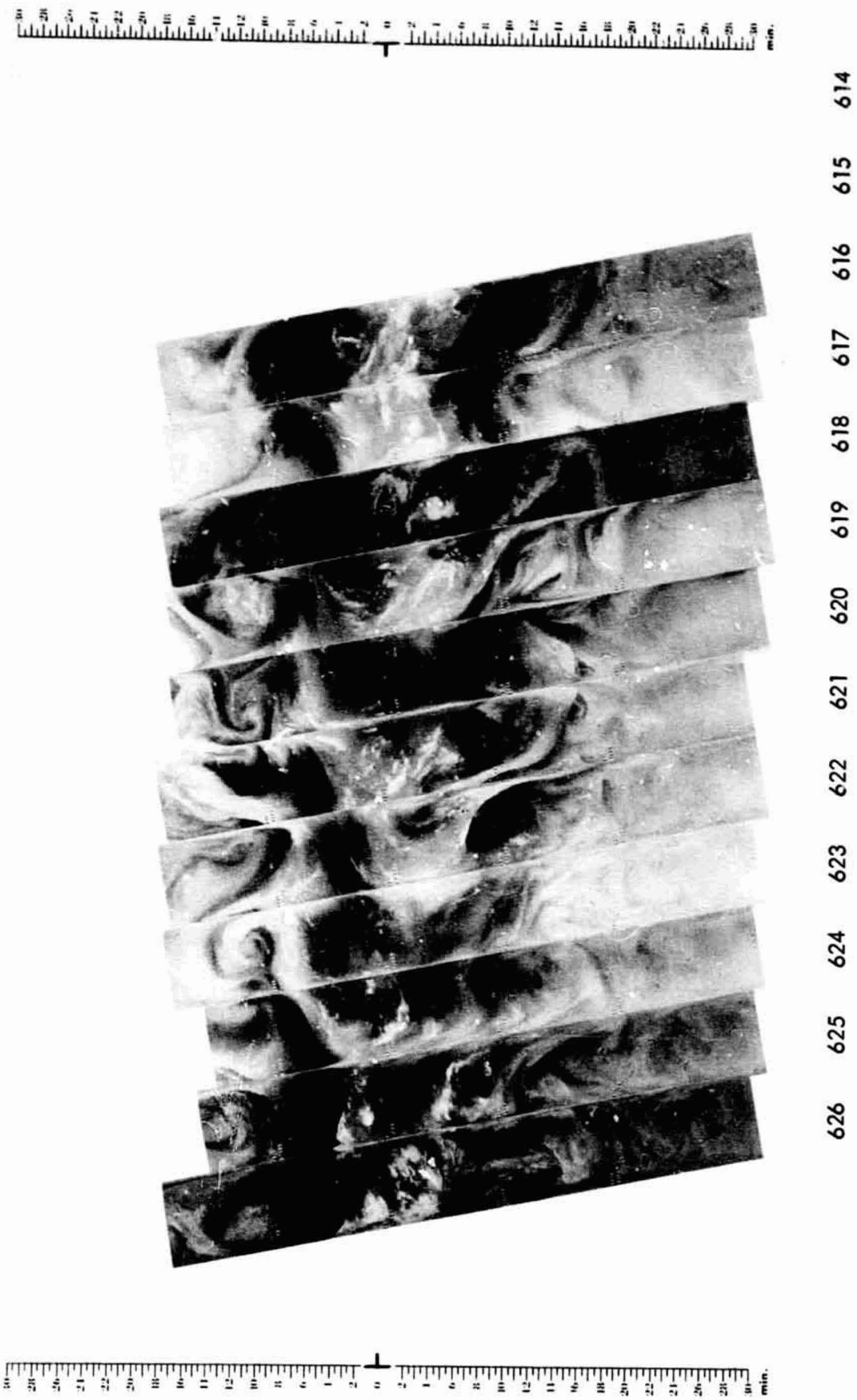
25 JANUARY 1973

6.7 μm

614 615 616 617 618 619 620 621 622 623 624 625 626

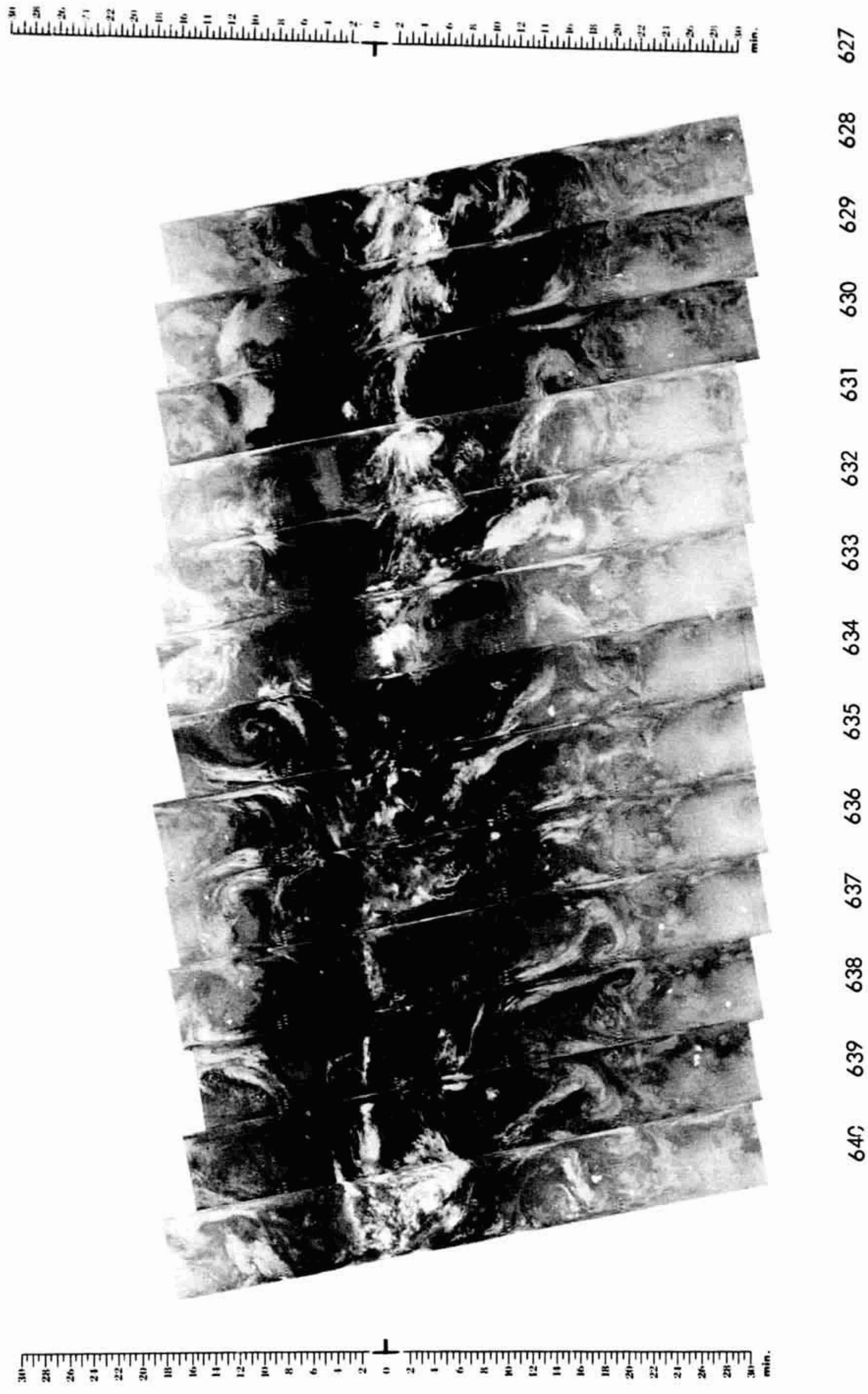
26 JANUARY 1973

11.5 μm



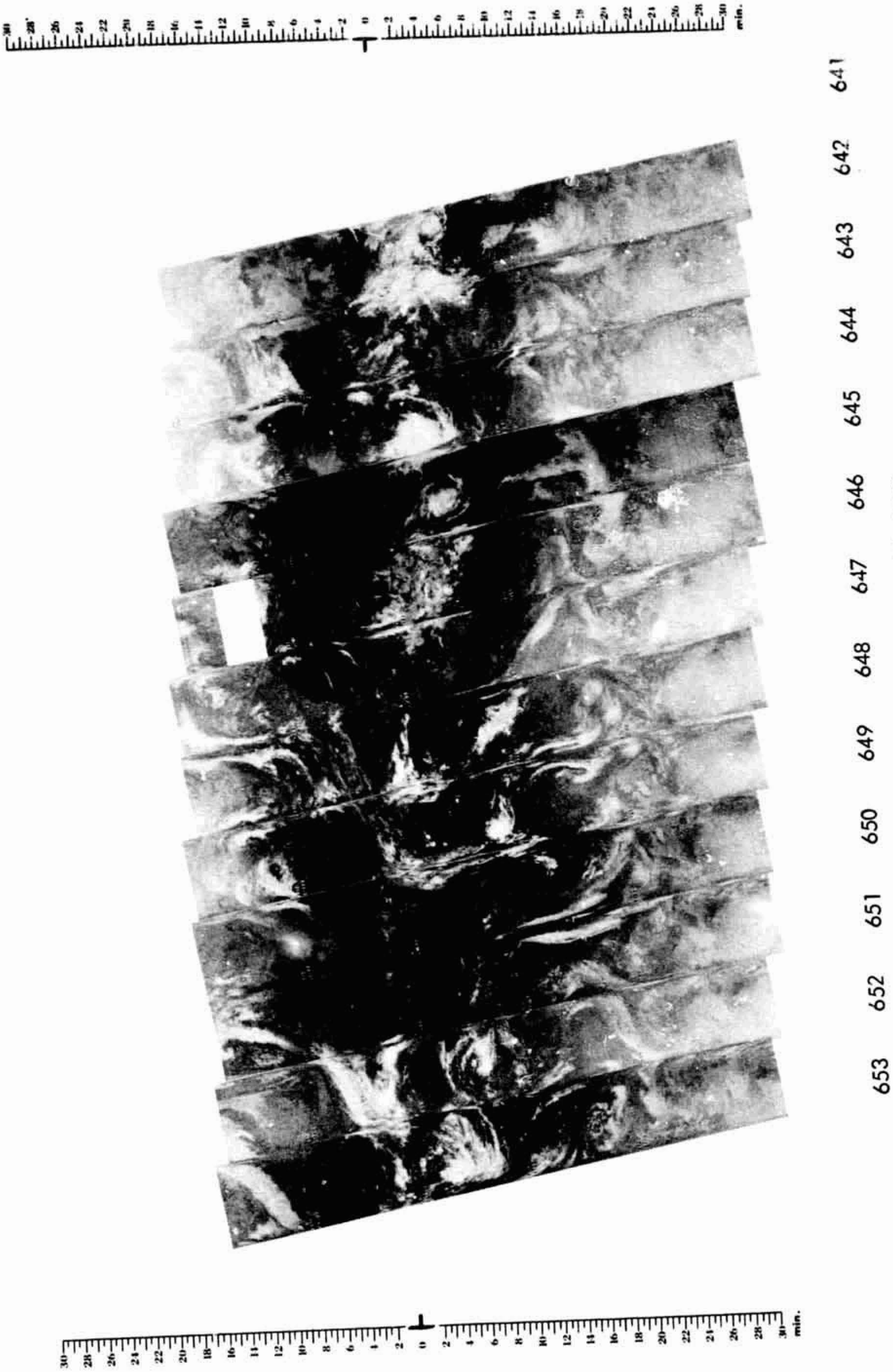
26 JANUARY 1973

6.7 μm

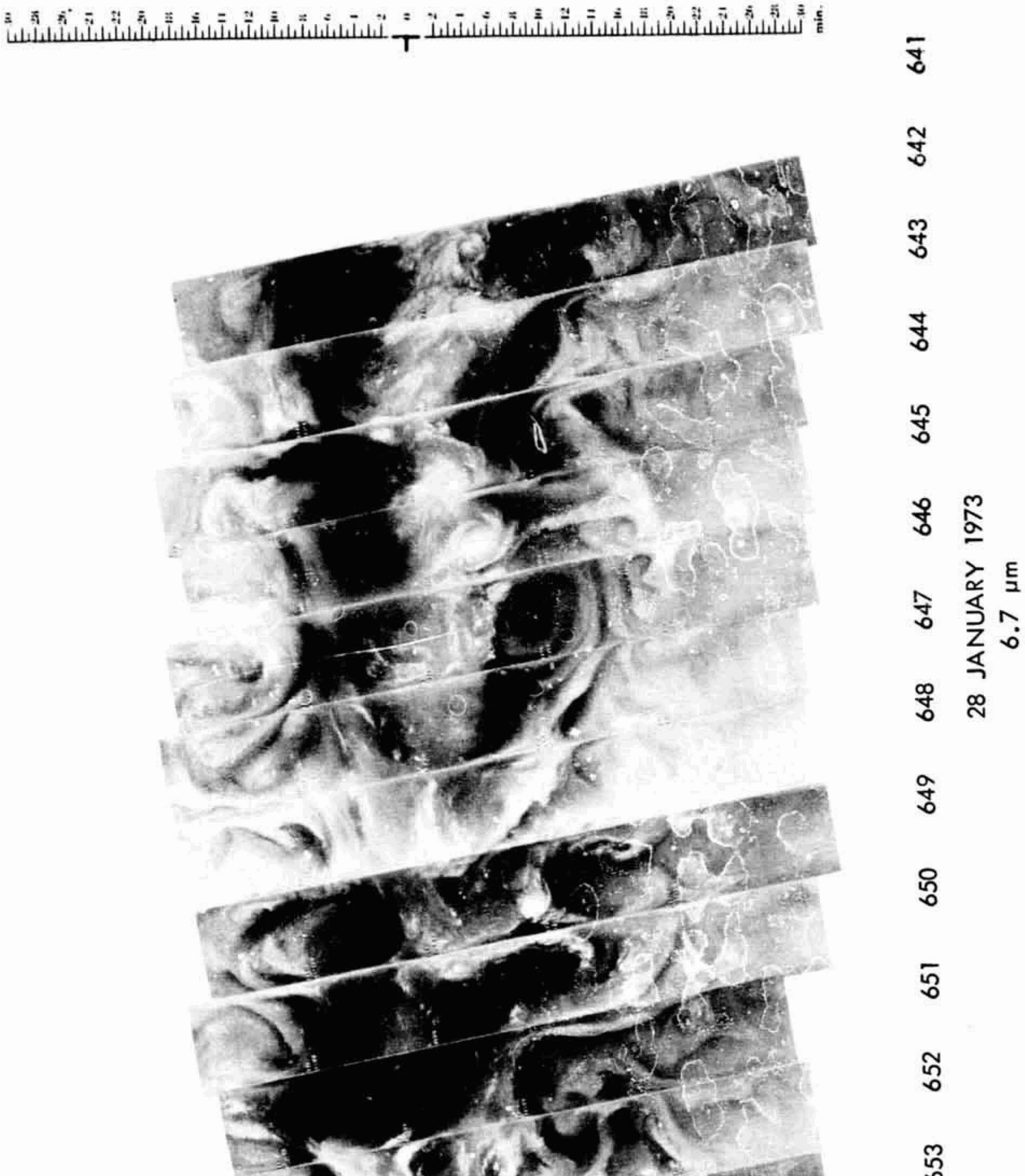


27 JANUARY 1973
11.5 μm

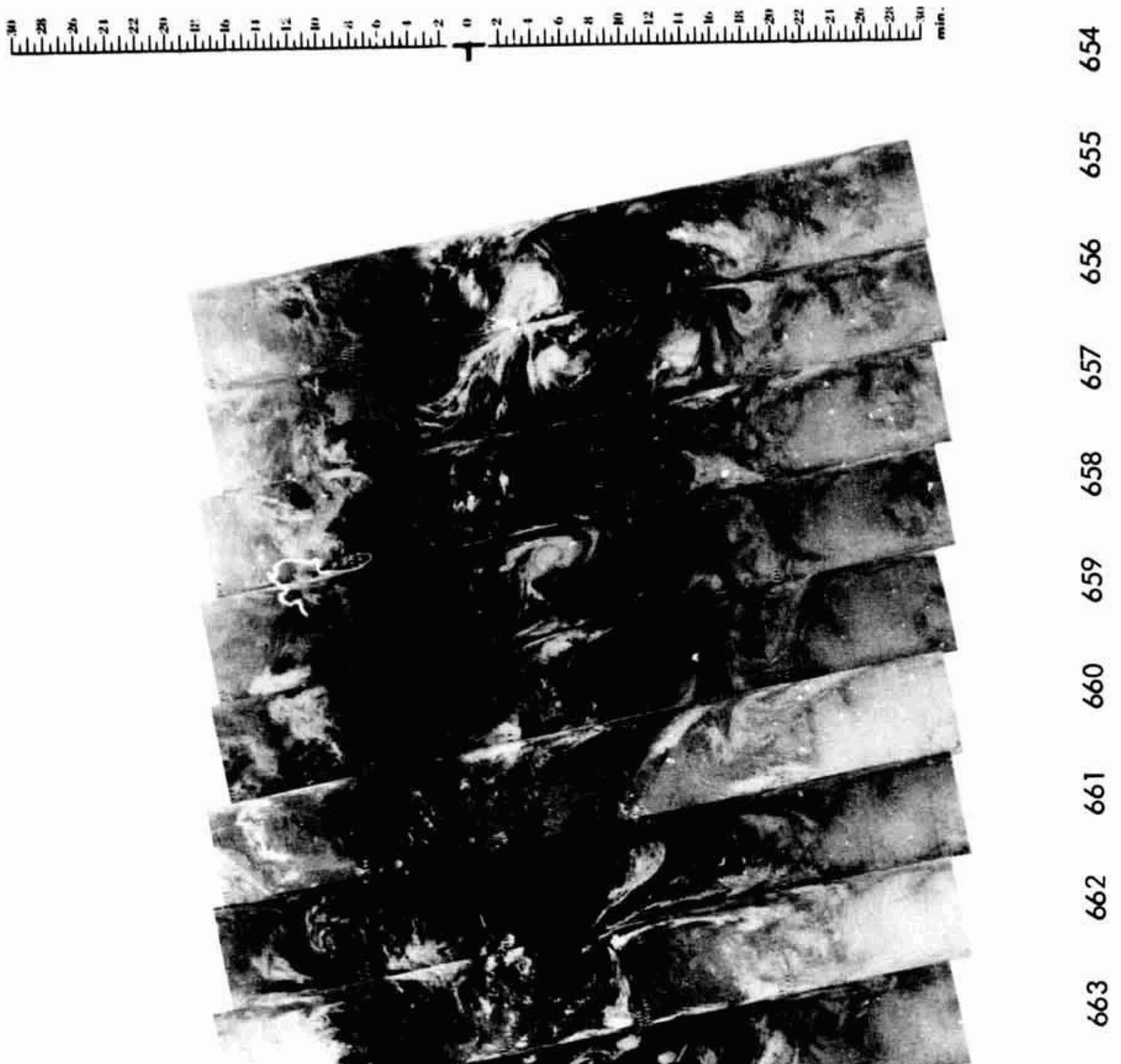
27 JANUARY 1973
6.7 μm



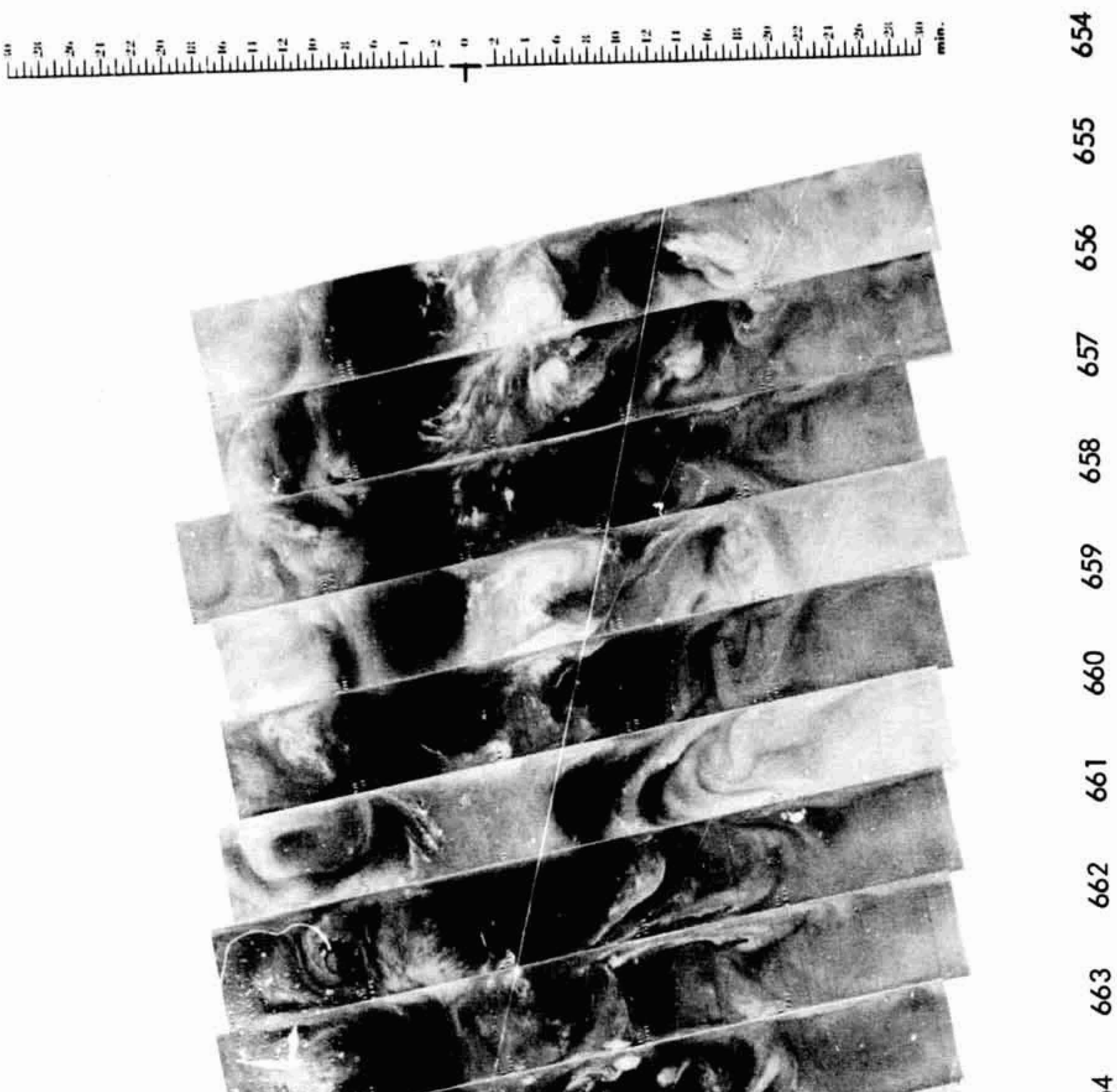
28 JANUARY 1973
11.5 µm



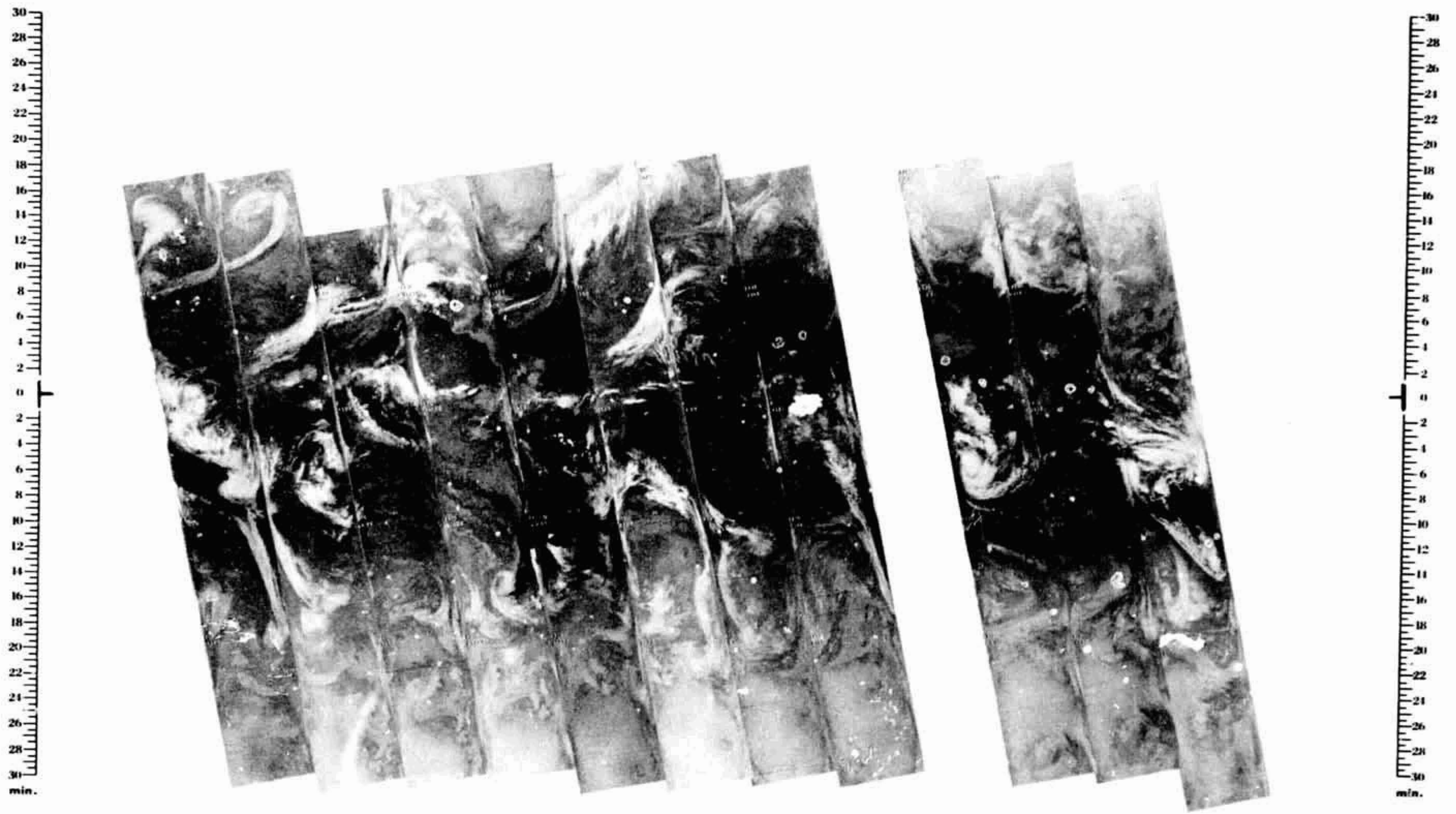
28 JANUARY 1973
6.7 µm



29 JANUARY 1973
11.5 µm



29 JANUARY 1973
6.7 μm



680 679 678 677 676 675 674 673 672 671 670 669 668

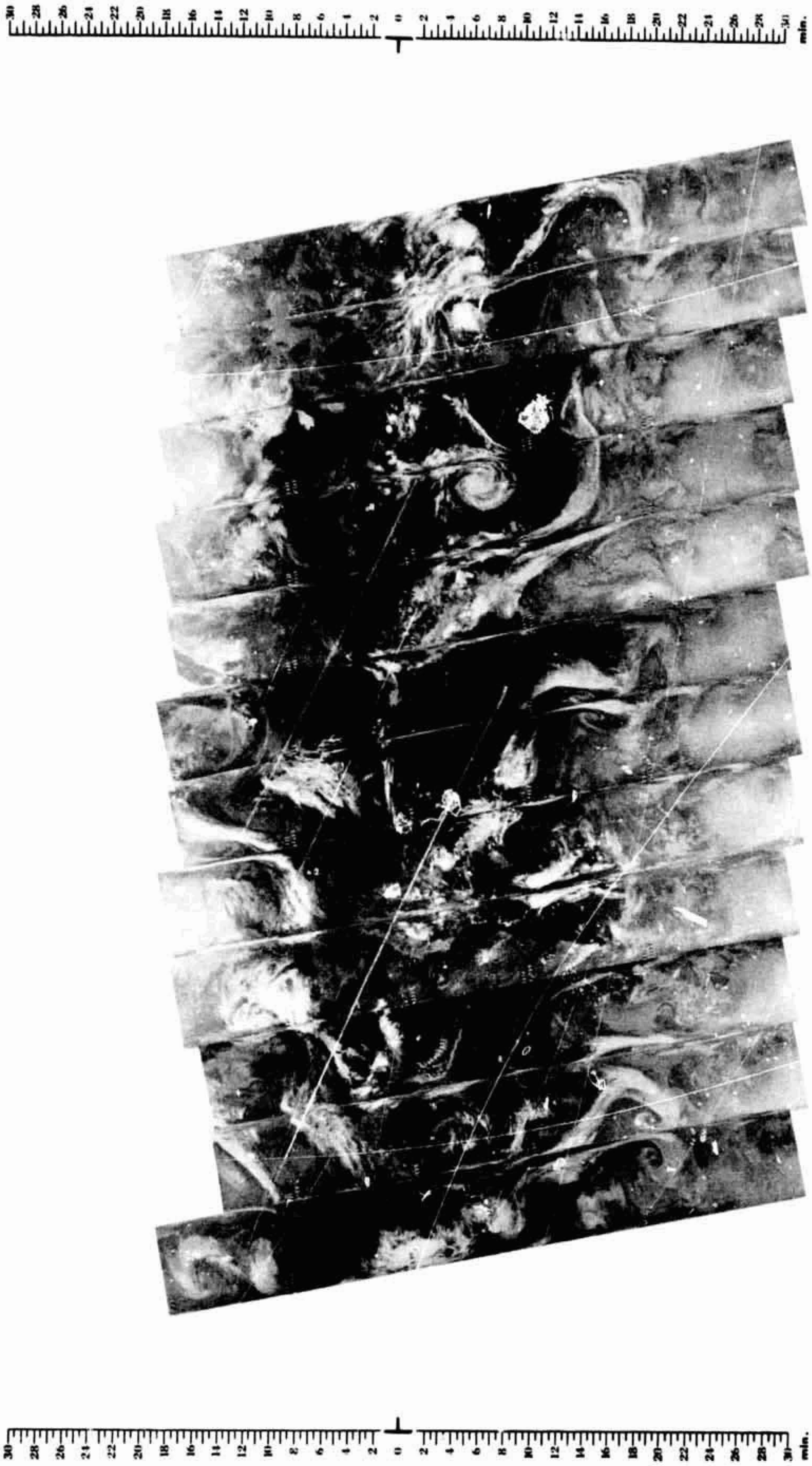
30 JANUARY 1973

11.5 μm

668 669 670 671 672 673 674 675 676 677 678 679 680

30 JANUARY 1973

6.7 µm



31 JANUARY 1973

11.5 μm

681 682 683 684 685 686 687 688 689 690 691 692 693

31 JANUARY 1973

6.7 μm

☆U.S. GOVERNMENT PRINTING OFFICE: 1973-735-970/814

SECTION 5

CORRECTIONS TO THE NIMBUS 5 USER'S GUIDE

This [illegible] corrections or additions to The Nimbus 5 User's Guide [illegible] necessary. If additional corrections are required, they will [illegible] catalog. All previous corrections will be carried forward cumulatively into each new catalog.

5.1 [illegible] Corrections to the [illegible]

Table 5-1

This table [illegible] Table 2-3 (page 31) in The Nimbus 5 User's Guide.

Table 2-3

THIR OUTPUT VOLTAGES VERSUS EQUIVALENT BLACKBODY TEMPERATURES AT DIFFERENT BOLOMETER TEMPERATURES FOR THE 11.5μm CHANNEL.

		Bolometer Temperature (°C)				
		0	10	20	30	40
Blackbody Temperature (°K)	0*	-0.405	-0.407	-0.413	-0.421	-0.425
	180	-0.618	-0.617	-0.617	-0.617	-0.606
	190	-0.711	-0.709	-0.706	-0.702	-0.685
	200	-0.829	-0.825	-0.820	-0.811	-0.786
	210	-0.976	-0.970	-0.961	-0.946	-0.911
	220	-1.153	-1.144	-1.130	-1.109	-1.062
	230	-1.363	-1.351	-1.332	-1.302	-1.240
	240	-1.606	-1.591	-1.565	-1.526	-1.448

*Space level

Table 2-3 (Continued)

Blackbody Temperature (°K)	Bolometer Temp. (°C) 0	10	20	30	40
250	-1.886	-1.867	-1.834	-1.783	-1.686
260	-2.202	-2.178	-2.137	-2.074	-1.955
270	-2.555	-2.526	-2.476	-2.399	-2.256
280	-2.946	-2.911	-2.851	-2.759	-2.589
290	-3.375	-3.334	-3.262	-3.153	-2.954
300	-3.841	-3.793	-3.709	-3.582	-3.352
310	-4.345	-4.289	-4.192	-4.045	-3.781
320	-4.886	-4.822	-4.711	-4.543	-4.241
330	-5.463	-5.391	-5.264	-5.074	-4.733

Table 5-2

This table replaces Table 2-4 (page 32) in The Nimbus 5 User's Guide.

Table 2-4

THIR OUTPUT VOLTAGES VERSUS EQUIVALENT BLACKBODY
TEMPERATURES AT DIFFERENT BOLOMETER
TEMPERATURES FOR THE 6.7 μm CHANNEL

Blackbody Temperature (°K)	Bolometer Temp. (°C) 0	10	20	30	40
0*	-0.507	-0.518	-0.532	-0.556	-0.576
180	-0.607	-0.618	-0.632	-0.655	-0.674
185	-0.644	-0.654	-0.669	-0.692	-0.710
190	-0.692	-0.702	-0.716	-0.739	-0.756
195	-0.752	-0.762	-0.776	-0.798	-0.814
200	-0.827	-0.838	-0.851	-0.873	-0.888
205	-0.921	-0.931	-0.944	-0.966	-0.978
210	-1.035	-1.045	-1.058	-1.078	-1.089
[illegible]	-1.172	-1.182	-1.195	-1.215	-1.223
220	-1.337	-1.347	-1.359	-1.379	-1.383
225	-1.533	-1.543	-1.554	-1.573	-1.573
230	-1.764	-1.774	-1.784	-1.801	-1.797
235	-2.033	-2.043	-2.052	-2.068	-2.059

*Space level

Table 2-4 (Continued)

Blackbody temperature (°K)	Bolometer Temp. (°C)				
	0	10	20	30	40
240	-2.350	-2.355	-2.363	-2.378	-2.362
245	-2.704	-2.714	-2.721	-2.734	-2.711
250	-3.115	-3.125	-3.131	-3.142	-3.111
255	-3.582	-3.592	-3.597	-3.605	-3.565
260	-4.110	-4.119	-4.122	-4.127	-4.077
265	-4.704	-4.714	-4.715	-4.717	-4.656
270	-5.367	-5.378	-5.376	-5.375	-5.300

5.2 SCMR Corrections to the User's Guide

There are no SCMR corrections to the User's Guide for this catalog.

5.3 ESMR Corrections to the User's Guide

Table 4-4, of The Nimbus 5 User's Guide, "ESMR Antenna Loss Ratio-Flight Model" will not be supplied. The antenna properties changed after final calibration and rendered these numbers useless. A set of empirical calibration numbers is being developed which will correct for the effects of antenna loss and side lobes, and the effects of different viewing angles. This will be published in a later catalog.

5.4 ITPR Corrections to the User's Guide

Table 5-3

This Table replaces Table 5-3 (page 125) in The Nimbus 5 User's Guide.

Table 5-3

ITPR CALIBRATION CONSTANTS

$$R_S = a_o + a_1 V^*$$

R_S = radiance of the scene (mw/m^2 sterad cm^{-1})

V = digital counts

Channel	a_o	a_1
1	1.0495	-0.001773
2	141.78	-0.1813
3	166.93	-0.2046
4	173.02	-0.2065
5	174.02	-0.1940
6	174.99	-0.1977
7	170.18	-0.1995

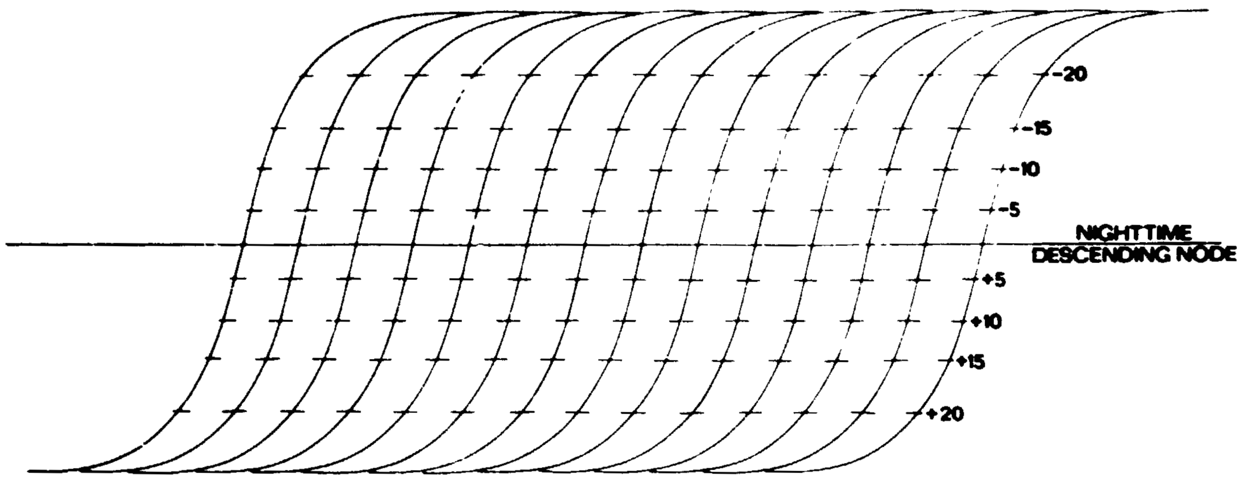
*The calibration constant a_o now includes the radiance of the chopper reference blackbody.

5.5 SCR Corrections to the User's Guide

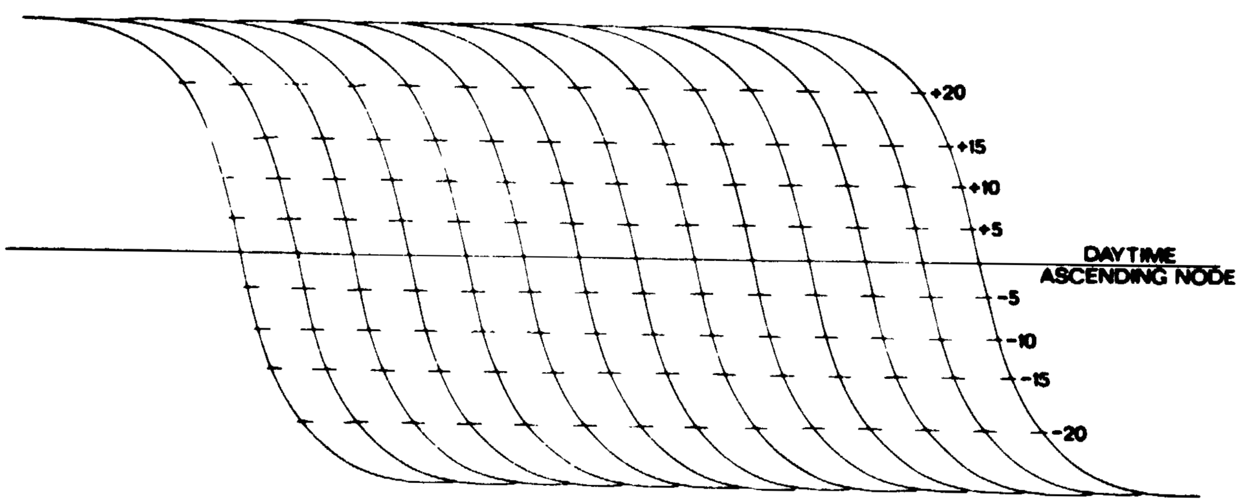
There are no SCR corrections to the User's Guide for this catalog.

5.6 NEMS Corrections to the User's Guide

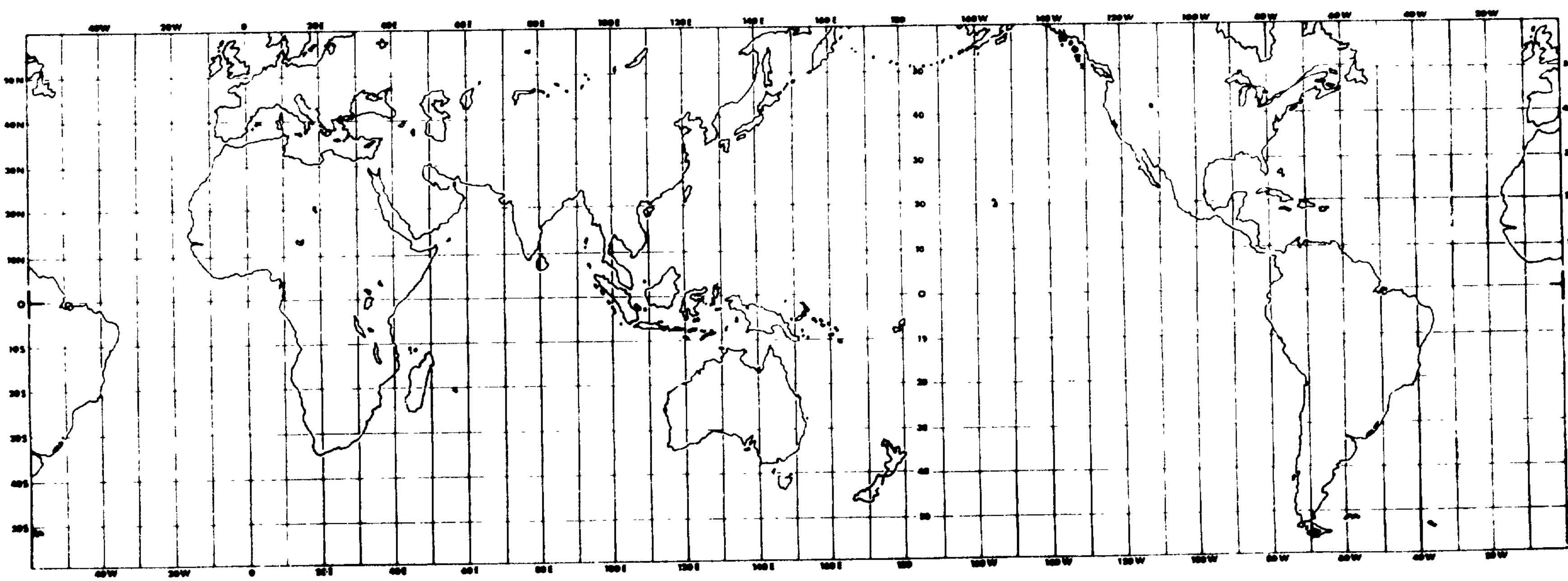
There are no NEMS corrections to the User's Guide for this catalog.



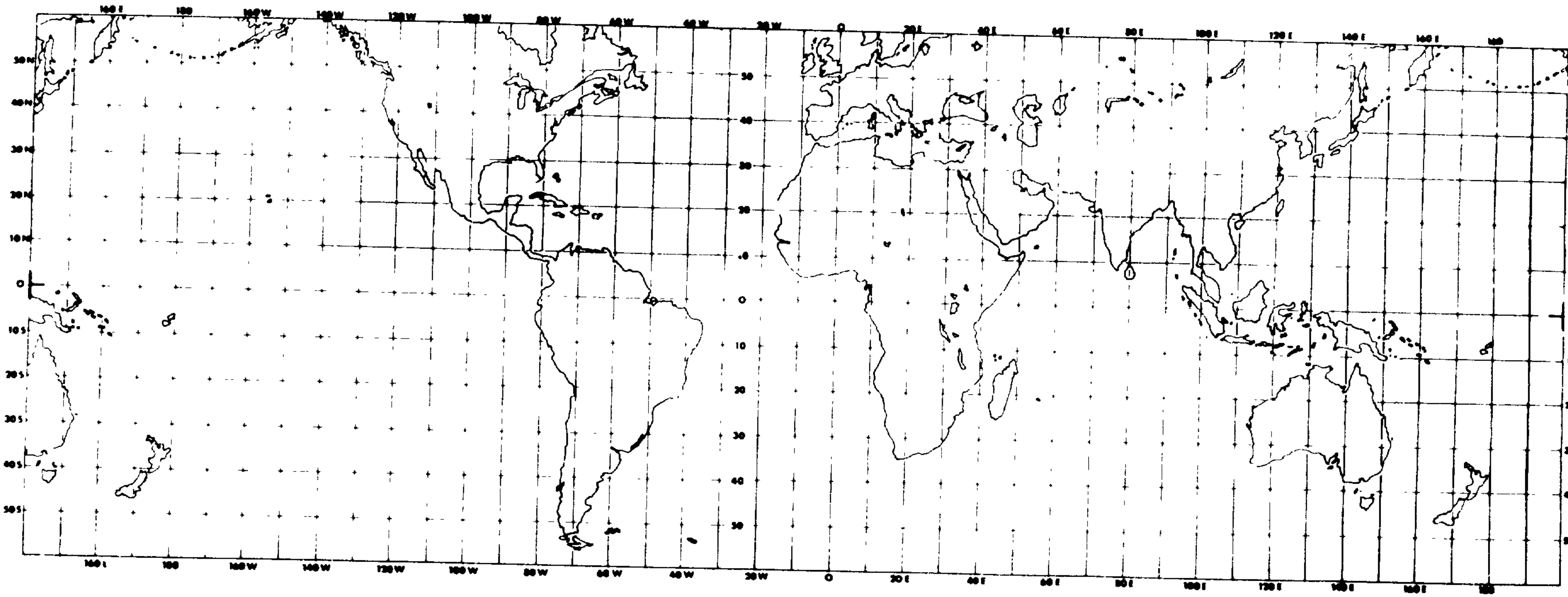
NIMBUS SUBSATELLITE TRACKS OVERLAY



NIMBUS SUBSATELLITE TRACKS OVERLAY



Location Guide
Average Scale for Nimbus
THIR Nighttime Montages



Location Guide
Average Scale for Nimbus
THIR Daytime Montages